3.7 Wildlife

3.7.1 Regulatory Background

Laws, regulations, and policies that directly influence wildlife management decisions for the TWE Project are primarily implemented by the BLM, USFS, USFWS, Wyoming Game and Fish Department (WGFD), CPW (formerly Colorado Division of Wildlife [CDOW]), UDWR, and Nevada Department of Wildlife (NDOW). Applicable laws, regulations, directives, and agreements relevant to the proposed Project are presented in **Table 3.7-1**.

Table 3.7-1 Relevant Statutes, Regulations, and Policies for Wildlife Species

Wildlife Species	Statutes, Regulations, and Policies
Big Game	• Wyoming Statutes 23-3-102; • Colorado Revised Statutes 33-1-101; • Utah Code 23-14-1, 23-16, and Rules R657-5; • Nevada Revised Statutes 501.005; • Nevada Administrative Code 502.020, 503.020; and • National Park Service Law, Policy, and Other Guidance (2006).
Small Game	• Wyoming Statutes 23-3-103; • Colorado Revised Statutes 33-1-101; • Utah Code 23-14-1, 23-48, and Rules R657-6, R657-9, R657-10, R657-11, R657-33, and R657-54; • Nevada Administrative Code 503.020, 503.025, 503.045; and • National Park Service Law, Policy, and Other Guidance (2006).
Nongame	• BLM MOU WO-230-2010-04; • BLM IM WY-2013-005; • BLM WO IM-2010-156; • BLM Manual 6500 • FS Agreement # 08-MU-1113-2400-264; • USFS Land and Resource Management Plans (LRMPs); • Wyoming Statutes 23-1-101, 23-1-103, 23-1-302 and 23-3-108; • Colorado Revised Statutes 33-1-101, 33-2-104; • Utah Code 23-14-1, and Rules R657-3, R65713, R657-19, and R657-53; • Nevada Administrative Codes 503.030, 503.035, 503.050, 503.080; and • National Park Service Law, Policy, and Other Guidance (2006).

3.7.2 Data Sources

Information regarding wildlife species and habitats within the wildlife analysis area was obtained from a review of existing published sources, BLM RMPs, USFS land and RMPs (forest plans), file information from BLM, USFS, WGFD, CPW, UDWR, NDOW, and USFWS, as well as the WYNDD, CNHP, UNHP, and NNHP database information. State wildlife action plans that were used to inform the analysis include:

- Wyoming Game and Fish Department State Wildlife Action Plan (WGFD 2010);
- Colorado's Comprehensive Wildlife Conservation Strategy and Wildlife Action Plan (CDOW 2006);
- Utah Comprehensive Wildlife Conservation Strategy (Sutter et al. 2005); and
- Nevada Wildlife Action Plan (Wildlife Action Plan Team 2012).

GIS shapefiles of big game habitat (e.g., crucial winter range, parturition habitat, migration corridors, etc.) were obtained from the WGFD, CPW, UDWR, and NDOW and reviewed for this project. This information is updated regularly and presents the most accurate big game habitat data for the wildlife analysis area. In addition, information received through correspondence with agency wildlife biologists has been incorporated, as appropriate.

3.7.3 Analysis Areas

The analysis areas for wildlife species were chosen because they represent the combination of geographic areas containing contiguous habitat that would be impacted by the Project as well as the management regimes to which this habitat is subject. Accordingly, these analysis areas provide a clear disclosure of the context of Project impacts in light of the management considerations for these areas. The wildlife analysis areas are based in part on HUC10 watershed boundaries. HUC10 watershed refers to the 10-digit hydrologic unit codes specifying the 5th-level watershed boundaries that were originally delineated by the USGS and subsequently refined by the NRCS. The HUC10 watershed areas range from approximately 40,000 to 250,000 acres in size and provide a clear bio-geographical delineation of vegetation communities and wildlife habitats. Section 3.4, Water Resources, presents tables and figures of HUC10 watersheds in the wildlife analysis area.

Table 3.7-2 presents acreages of the major vegetation communities providing wildlife habitat within the wildlife analysis area.

Table 3.7-2 Vegetation Communities Within the Wildlife Analysis Area

Vegetation Community	Acres Within the Wildlife Analysis Area[1]	Percent of the Wildlife Analysis Area
Agricultural Land	788,417	3.2
Aspen Forest and Woodland	682,304	2.8
Barren/Sparsely Vegetated	316,712	1.3
Cliff and Canyon	816,613	3.3
Conifer Forest	546,369	2.2
Deciduous Forest	14,082	0.1
Desert Shrubland	3,073,997	12.4
Developed/Disturbed Land[2]	990,655	4.0
Dunes	117,775	0.5
Ephemeral Wash	68,472	0.3
Grassland	1,533,945	6.2
Greasewood Flat	876,836	3.5
Herbaceous Wetland	194,940	0.8
Montane Grassland	72,084	0.3
Montane Shrubland	893,369	3.6
Open Water	155,477	0.6
Pinyon-juniper Woodland	4,123,148	16.7
Sagebrush Shrubland	6,326,232	25.6
Saltbush Shrubland	2,893,155	11.7
Tundra	13,956	0.1
Woody Riparian and Wetlands	209,643	0.8
Total	24,708,181	100.0

[1] The wildlife analysis area includes suitable habitat within the HUC10 watersheds crossed by the Project.

[2] Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas.

Sources: USGS 2010, 2005, 2004 (SWReGAP and NWReGAP).

Three analysis areas for wildlife species are defined as follows:

- The wildlife analysis area for small game and nongame species includes suitable habitat within the HUC10 watersheds, traversed by Project alternatives.
- The big game analysis area includes the most important and limiting seasonal habitat (e.g., crucial winter range, parturition range) within all state big game management units located within HUC10 watersheds traversed by the Project. This analysis area provides the context for Project and cumulative impacts on habitat specifically managed by state agencies for big game populations.
- The analysis area for USFS MIS includes suitable habitat within the entire national forest(s) for which they are identified. This MIS analysis area was chosen because it allows disclosure of the context of impacts within the unique requirements of the USFS for monitoring and managing MIS within the jurisdiction of National Forest Service lands. The exceptions are mule deer and Rocky Mountain elk, which are MIS but are analyzed under the big game analysis area described above. MIS that are accorded special status as BLM, state-listed, or federal species are analyzed in Section 3.8, Special Status Wildlife Species.

Table 3.7-3 presents the acreages of the major vegetation communities providing wildlife habitat within the MIS analysis area.

3.7.4 Baseline Description

As discussed in Section 3.5, Vegetation, 20 vegetation communities and developed/disturbed land are located within the analysis areas for wildlife species. For the purposes of this analysis, the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages. Nonetheless, some disturbance-tolerant native and introduced wildlife species do utilize these areas. Sagebrush shrubland, saltbush shrubland, desert shrubland, and pinyon-juniper woodland are the most common vegetation communities and account for 66 percent of the wildlife analysis area. A variety of wildlife species are associated with habitats in the wildlife analysis area, with greater species diversity generally occurring in areas exhibiting greater vegetation structure, soil moisture, and open water, such as wetlands and riparian areas. Species that inhabit wetland and riparian habitats are limited to perennial and intermittent drainages, marshes, and the margins of reservoirs, lakes, and ponds, or in the immediate vicinity of these areas.

The following sections (i.e., big game species, small game species, nongame species, and USFS MIS) include baseline descriptions of both resident and migratory wildlife species that have either been documented within the wildlife analysis area or that may occur within the wildlife analysis area based on habitat associations. Detailed species descriptions by Project region are presented in Section 3.7.5, Regional Summary. Amphibians and fish are addressed in Section 3.9, Aquatic Biological Resources, and Section 3.10, Special Status Aquatic Species. Migratory birds are addressed in Section 3.22, Migratory Birds. Special status wildlife species are addressed in Section 3.8, Special Status Wildlife Species.

Table 3.7-3 Vegetation Communities/Habitat Types within the MIS Analysis Area on National Forest System Lands

Vegetation Community	Ashley National Forest Region II		Dixie National Forest Region III		Fishlake National Forest Region II		Manti-La Sal National Forest Region II		Uinta-Wasatch-Cache National Forest Region II	
	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest
Agricultural Land	2,691	0.2	629	<0.1	623	<0.1	1,466	0.1	290	<0.1
Aspen Forest and Woodland	102,261	7.7	196,825	10.5	196,958	13.5	234,483	17.5	231,663	25.9
Barren/Sparsely Vegetated	136,429	10.2	26,266	1.4	11,977	0.8	16,519	1.2	11,182	1.2
Cliff and Canyon	39,266	2.9	93,023	4.9	38,891	2.7	43,352	3.2	25,335	2.8
Conifer Forest	543,194	40.7	537,641	28.5	224,021	15.4	289,618	21.7	114,549	12.8
Deciduous Forest	1,125	0.1	0	–	1	<0.1	0	–	28,171	3.1
Desert Shrubland	0	–	5,265	0.3	121	<0.1	1	<0.1	0	–
Developed/Disturbed[1]	42,056	3.1	26,479	1.4	28,664	2.0	4,505	0.3	497	0.1
Dunes	23	<0.1	2	<0.1	0	–	0	–	0	–
Ephemeral Wash	119	<0.1	0	–	0	–	0	–	0	–
Grassland	1,591	0.1	2,010	0.1	7,453	0.5	104	<0.1	3,211	0.4
Greasewood Flat	1,891	0.1	19	<0.1	306	<0.1	80	<0.1	0	–
Herbaceous Wetland	28,424	2.1	4,438	0.2	4,530	0.3	2,789	0.2	15,225	1.7
Montane Grassland	25,557	1.9	12,854	0.7	9,129	0.6	26,225	2.0	26,455	3.0
Montane Shrubland	36,831	2.8	106,207	5.6	211,109	14.5	230,868	17.3	168,362	18.8
Open Water	21,383	1.6	2,445	0.1	4,334	0.3	2,282	0.2	16,673	1.9
Pinyon-Juniper Woodland	104,031	7.8	521,470	27.7	426,154	29.3	265,022	19.8	50,613	5.7
Sagebrush Shrubland	200,159	15.0	315,223	16.7	270,972	18.6	192,203	14.4	187,523	20.9
Saltbush Shrubland	15,422	1.2	497	<0.1	2,738	0.2	2,814	0.2	71	<0.1
Tundra	17,639	1.3	16,504	0.9	7,664	0.5	18,793	1.4	57	<0.1
Woody Riparian and Wetlands	15,120	1.1	15,660	0.8	8,234	0.6	6,028	0.5	15,377	1.7
Totals	**1,335,210**	**100**	**1,883,453**	**100**	**1,453,879**	**100**	**1,337,152**	**100**	**895,255**	**100**

[1] Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some wildlife species utilize these areas.

3.7.4.1 Big Game Species

Big game species that occur within the big game analysis area include pronghorn, mule deer, white-tailed deer, elk, moose, Rocky Mountain bighorn sheep, desert bighorn sheep, black bear, and mountain lion (Armstrong et al. 2011; BLM 2008; NDOW 2011; UDWR 2009a,b). Population numbers for these big game species typically fluctuate from year to year and depend on conditions such as hunting harvest, forage quality, water availability, cover, and weather patterns. The big game analysis area contains numerous big game seasonal habitats including migration corridors, production/parturition areas, and crucial winter range. Big game migration corridors and crucial winter range have been identified by the WGFD, CPW, UDWR, and NDOW and are typically considered the most important and limiting habitats for big game species, especially during harsh winters with extremely cold temperatures and above average snow depths. Additional habitats such as parturition range (i.e., calving and fawning areas) also may be limiting in portions of the big game analysis area. Information on big game population trends is generally available at the herd unit level in state wildlife agency big game monitoring and management plans. Details on big game species and seasonal habitats found within the big game analysis area are presented below.

Pronghorn

Pronghorn inhabit grassland, desert shrubland, and sagebrush shrubland in flat to rolling topography and browse on grass, forbs, and shrubs, especially sagebrush, throughout the year. Pronghorn are prominent in portions of the big game analysis area with adequate forage and surface water (Armstrong et al. 2011; BLM 2008). During the winter, pronghorn generally utilize areas of relatively high sagebrush densities and overall low snow accumulations on south- and west-facing slopes.

Mule Deer

Mule deer occur throughout the big game analysis area but are concentrated in areas of rolling terrain and forested habitats (Armstrong et al. 2011; BLM 2008). A variety of vegetation communities provide suitable habitat for mule deer. These vegetation communities include aspen forests and woodlands, conifer forests, shrublands, and pinyon-juniper woodlands. Although their diet varies somewhat by season, mule deer are primarily browsers, feeding on a wide variety of woody vegetation including shoots, leaves, and twigs of shrubs and trees. Winter habitat for mule deer occurs in areas of relatively high sagebrush densities and overall low snow accumulation on south- and west-facing slopes.

White-tailed Deer

White-tailed deer occur in portions of the big game analysis area and are typically found near woody riparian and wetland areas in south-central Wyoming and northwestern Colorado (Armstrong et al. 2011). White-tailed deer feed on a variety of plant species but tend to rely heavily on agricultural fields, depending on the type of forage present (e.g., alfalfa, wheat, etc.). Winter habitat is typically low elevation riparian corridors and agricultural fields (BLM 2008). White-tailed deer are expanding their population westward in Wyoming and have increased in numbers considerably in the past 5 to 10 years in the North Platte River drainage. In northwestern Colorado, white-tailed deer are expanding their populations in agricultural areas along the Yampa River.

Elk

Elk occur in portions of the big game analysis area and are typically found in forested habitats, although in southern Wyoming and northwestern Colorado elk are found in large herds during the winter months in open sagebrush shrublands and grasslands (BLM 2008; CPW 2011). Winter habitat for elk typically consists of low elevation rolling hills, meadows, and agricultural fields. Elk are not as susceptible as other big game species to harsh winter conditions due to their nutritional requirements and large body size and will often remain at higher elevations until snow depths reach approximately 16 inches (Armstrong et al. 2011).

Moose

Moose occur within the big game analysis area in portions of Wyoming and Utah (Armstrong et al. 2011; UDWR 2009b). The species occurs in forested areas, primarily along riparian corridors with abundant willow habitat. In Wyoming, the species has increased in numbers in the Baggs area along the Little Snake River as moose populations from the Park Range expand into southwestern Wyoming. Moose feed on a wide variety of plants including trees, shrubs, grasses, forbs, algae, and other aquatic plants (Armstrong et al. 2011; UDWR 2009b). Generally, moose are not as susceptible to severe winter conditions as other big game species due to their large body size that allows them to forage in deep snow. Consequently, many moose populations in Utah occur year-round in suitable habitat (UDWR 2009b).

Rocky Mountain Bighorn Sheep

Rocky Mountain bighorn sheep occur in portions of the big game analysis area in Utah (UDWR 2008) and Colorado (CPW 2012) and are listed as USFS sensitive in the Manti-La Sal, Fishlake, and Ashley National Forests and the Uinta National Forest Planning Area of the Uinta-Wasatch-Cache National Forest (USFS 2013)[1]. The species occurs in a variety of habitats from alpine to lower elevation foothills. Rocky Mountain bighorn sheep typically occupy steep, inaccessible habitat that provides them vantage points for predator detection and escape cover (Armstrong et al. 2011; CDOW 2009; UDWR 2008). This species feeds primarily on grasses, shrubs, and forbs depending on the elevation of occupied habitat. Winter range for Rocky Mountain bighorn sheep typically consists of low elevation south-facing slopes that are blown free of snow cover. Rocky Mountain bighorn sheep are gregarious and exhibit high site fidelity. In many areas of their range, this species spends the winter months in the same localized winter habitat each year (Armstrong et al. 2011; CDOW 2009; UDWR 2008).

Desert Bighorn Sheep

Desert bighorn sheep occur within the big game analysis area in Utah and Nevada (NDOW 2001; UDWR 2008), and are listed as USFS sensitive in the Dixie, Fishlake, and Manti-La Sal National Forests. The species occurs in desert shrubland and barren/sparsely vegetated habitats and is most common in steep, rocky terrain with abundant forage (NDOW 2001; UDWR 2008). Water sources are often limited in desert bighorn sheep habitat; therefore, this species may occupy habitats near streams, springs, and man-made water sources (i.e., guzzlers) during the summer months (NDOW 2001). The diet of the desert bighorn sheep is similar to that of the Rocky Mountain bighorn sheep and consists primarily of grasses, shrubs, and forbs (NDOW 2001; UDWR 2008). Due to the geographic range of the desert bighorn sheep, use of seasonal habitats is primarily determined by water and forage availability rather than weather patterns and snow depth (UDWR 2008).

Black Bear

Black bear are classified as a big game species in Wyoming, Colorado, and Nevada. In Utah, black bear are managed under the furbearer program which provides certain protections. The species is fairly common within the big game analysis area, especially in forested, woody riparian, and wetland areas along perennial waterbodies (Armstrong et al. 2011). Black bears generally occur at low densities in habitats found within the big game analysis area and their distribution is dependent on existing disturbance and available food sources.

[1] In March 2008, the Uinta National Forest and the Wasatch-Cache National Forest were combined into one administrative unit (Uinta-Wasatch-Cache National Forest). Each of these forests continues to operate under individual forest plans approved in 2003. The term “Uinta National Forest Planning Area” is used to refer to the portion of the Uinta-Wasatch-Cache National Forest managed under the 2003 LRMP for the Uinta National Forest.

Mountain Lion

Mountain lions are classified as a big game species in Wyoming, Colorado, and Nevada. In Utah, mountain lions are managed under the furbearer program which provides certain protections. The species is fairly common within the big game analysis area, especially in forested, woody riparian, and wetland areas along perennial waterbodies (Armstrong et al. 2011). Mountain lions generally occur at low densities in habitats found within the big game analysis area and their distribution is dependent on available food sources, primarily mule deer.

3.7.4.2 Small Game Species

Small game species that occur within the wildlife analysis area include upland game birds, small mammals, furbearers, and waterfowl. Potential habitat for small game species (except waterfowl) within the wildlife analysis area includes all of the vegetation communities present. Potential habitat for waterfowl within the wildlife analysis area includes the herbaceous wetland, open water, and woody riparian and wetlands vegetation communities.

Upland Game Birds

Upland game bird species that occur within the wildlife analysis area include greater sage-grouse, Columbian sharp-tailed grouse, dusky grouse, ruffed grouse, chukar, ring-necked pheasant, wild turkey, Gambel's quail, California quail, band-tailed pigeon, and mourning dove. The greater sage-grouse is a federal candidate species, as well as a BLM sensitive, USFS sensitive, and state sensitive species and is discussed in Section 3.8, Special Status Wildlife Species. The Columbian sharp-tailed grouse also is a BLM sensitive and state sensitive species and is discussed in Section 3.8, Special Status Wildlife Species. Dusky grouse inhabit forested areas of Wyoming, Colorado, and Utah that contain aspen, chokecherry, serviceberry, Douglas fir, lodgepole pine, and spruce/fir vegetation communities (Kingery 1998; Stokes and Stokes 1996). Ruffed grouse inhabit forested habitats in central Utah with a mixture of deciduous and coniferous trees (UDWR 2011).

Chukars occur in central and western Utah and Nevada in dry, rocky terrain with abundant cheatgrass (UDWR 2003). Depending on weather conditions, this species is often found near water sources (e.g., guzzlers, springs, seeps) in drainages that have sufficient escape cover. Ring-necked pheasants inhabit the agricultural areas of central Utah and are relatively common in areas that provide sufficient cover (e.g., weedy fields, fence rows, grain fields, wetlands, ditches). Wild turkeys occur in Colorado, Utah, and Nevada and are typically associated with ponderosa pine and oakbrush habitats but also may be found in riparian and agricultural areas with suitable trees for roosting (Boyle 1998; UDWR 2011). The wild turkey also is identified as a MIS for the Dixie National Forest. Gambel's quail occur in Colorado, Utah, and Nevada, while California quail occur in Utah and Nevada (Stokes and Stokes 1996; UDWR 2011). These two species occupy similar shrub habitats near riparian areas (Stokes and Stokes 1996).

Band-tailed pigeons occur in Colorado and Utah in forests and mountain shrubland habitats, primarily ponderosa pine and oakbrush (Dexter 1998). Mourning doves occur in habitats ranging from deciduous forests to shrubland and grassland communities, often nesting in trees or shrubs near riparian areas or water sources (Stokes and Stokes 1996). Most upland game bird species feed on a wide variety of plant and insect species depending on the time of year (i.e., insects during the spring and summer and leaves and seeds during the fall and winter). Many of the species described above exhibit annual population fluctuations depending on habitat conditions and weather patterns.

Small Game Mammals

Small game mammals that are likely to occur within the wildlife analysis area include mountain cottontail, desert cottontail, snowshoe hare, black-tailed jackrabbit, white-tailed jackrabbit, and pine squirrel (Armstrong et al. 2011). These species occupy a wide variety of habitats from high-elevation conifer forests to low elevation deserts and sagebrush shrubland. Most of these species are fairly abundant

within suitable habitat and their populations typically follow a cyclical pattern that exhibits highs and lows at approximately 10-year intervals (Armstrong et al. 2011).

Furbearers

Furbearers likely to occur within the wildlife analysis area include beaver, muskrat, raccoon, striped skunk, long-tailed weasel, short-tailed weasel, American badger, bobcat, coyote, mink, gray fox, kit fox, and red fox (BLM 2008; CPW 2010; UDWR 2010; NAC 503.025). These species have wide distributions within the wildlife analysis area and are found within a variety of habitat types (e.g., sagebrush shrubland, desert shrubland, pinyon-juniper woodland, montane shrubland, grassland, etc.). The distribution of furbearers within the wildlife analysis area is typically determined by available food sources (e.g., small rodents, fish, insects, waste grain, and human food waste). The Canada lynx also is a furbearer but is federally listed as threatened, BLM sensitive, Utah state sensitive, and Colorado State endangered and is discussed in detail in Section 3.8, Special Status Wildlife Species.

Waterfowl

The wildlife analysis area is located within the Central and Pacific Flyways. Common waterfowl species that may occur within the wildlife analysis area include Canada goose, mallard, green-winged teal, northern pintail, gadwall, American wigeon, and common goldeneye. Other common summer residents include blue-winged teal, northern shoveler, redhead, and scaup (lesser and greater) (Cerovski et al. 2004; Floyd et al. 2007; Kingery 1998; Stokes and Stokes 1996). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the wildlife analysis area. For the purposes of this analysis, these habitats are classified as the open water, herbaceous wetland, and woody riparian and wetlands vegetation communities. Population numbers for these species vary annually based on available habitat and weather patterns. While waterfowl species are considered game birds, they also are protected under the MBTA. **Table 3.7-4** provides population trend information for waterfowl species in the interior U.S.

3.7.4.3 Nongame Species

A diversity of nongame species (e.g., small mammals, raptors, passerines, and reptiles) occupies a variety of habitat types within the wildlife analysis area. Migratory birds are addressed in Section 3.22, Migratory Birds. Nongame species serve as predators, prey, and scavengers in ecosystems. Common nongame wildlife species include birds and small mammals such as bats, voles, chipmunks, gophers, woodrats, ground squirrels, and mice. These species provide a substantial prey base for predators within the wildlife analysis area including larger mammals (e.g., coyote, American badger, bobcat), raptors (i.e., eagles, hawks, falcons, owls), and reptiles (i.e., snakes). The white-tailed prairie dog is a common prey species that is classified as BLM sensitive and is analyzed in Section 3.8, Special Status Wildlife Species.

Small Mammals

Potential habitat for small mammal species within the wildlife analysis area includes all of the vegetation communities present. Species that occur within the wildlife analysis area include the white-tailed prairie dog, least chipmunk, rock squirrel, yellow-bellied marmot, Great Basin pocket mouse, mountain cottontail, and black-tailed jackrabbit (Armstrong et al. 2011). Nongame small mammals that are further classified as sensitive are discussed in Section 3.8, Special Status Wildlife Species. A number of bat species also occurs within the wildlife analysis area (Armstrong et al. 2011; Bradley et al. 2006; Cerovski et al. 2004; Oliver 2000; WGFD 2010) and, with the exception of the little brown myotis, these species are classified as state sensitive, BLM sensitive, or USFS sensitive and are discussed in Section 3.8, Special Status Wildlife Species.

Table 3.7-4 Waterfowl Trends and Annual Breeding Population Estimates

	2008	2009	2010	2011	2012	2013	Trend[1]
Waterfowl							
Canada goose (Rocky Mountain population)	210,400	128,400	148,900	111,700	143,000	158,400	No trend over 2004 – 2013
Canvasback	489,000	662,000	585,000	691,000	760,000	787,000	37% above LTA
Redhead	1,100,000	1,000,000	1,064,000	1,400,000	1,300,000	1,202,000	76% above LTA
Northern shoveler	3,500,000	4,400,000	4,057,000	4,600,000	5,000,000	4,751,000	96% above LTA
Scaup (lesser and greater)	3,700,000	4,200,000	4,244,000	4,300,000	5,200,000	4,166,000	17% below LTA
Gadwall	2,700,000	3,100,000	2,977,000	3,300,000	3,600,000	3,351,000	80% above LTA
American wigeon	2,500,000	2,500,000	2,425,000	2,100,000	2,100,000	2,644,000	2% above LTA
Green-winged teal	3,000,000	3,400,000	3,476,000	2,900,000	3,500,000	3,053,000	51% above LTA
Blue-winged teal	6,600,000	7,400,000	6,329,000	8,900,000	9,200,000	7,732,000	60% above LTA
Northern pintail	2,600,000	3,200,000	3,509,000	4,400,000	3,500,000	3,335,000	17% below LTA
Mallard	7,700,000	8,500,000	8,430,000	9,200,000	10,600,000	10,400,000	36% above LTA

[1] LTA = long-term average, 1955-2012

Sources: Flyways.us 2012; USFWS 2013, 2012, 2011, 2010, 2009, 2008.

Reptiles

Potential reptile habitat within the wildlife analysis area includes nearly all of the vegetative communities present, with the exception of high elevation conifer forests and tundra. Species that occur within the wildlife analysis area include the side-blotched lizard, yellow-backed spiny lizard, western fence lizard, long-tailed brush lizard, ornate tree lizard, tiger whiptail, desert horned lizard, Great Basin collared lizard, northern sagebrush lizard, common kingsnake, spotted leaf-nose snake, western ground snake, long-nosed snake, desert night snake, western patch-nosed snake, western rattlesnake, Great Basin gopher snake, bull snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999; NDOW 2012). Sensitive reptile species are discussed in Section 3.8, Special Status Wildlife Species.

3.7.4.4 USFS Management Indicator Species

A USFS MIS is a plant or animal species selected because its status is believed to: 1) be indicative of the status of a larger group of species; 2) be reflective of the status of a key habitat type; or 3) act as an early warning of an anticipated stressor to ecological integrity. The key characteristics of MIS are that their status and trend provide insights to the integrity of the larger ecological system to which they belong. Wildlife species that have been selected as MIS for the national forests traversed by the Project are presented in **Table 3.7-5**. MIS that are designated as special status species are presented in Section 3.8, Special Status Wildlife Species. Mule deer and Rocky Mountain elk are analyzed as big game species. National Forests potentially traversed by Project alternatives include the Ashley, Dixie, Fishlake, Manti-La Sal, and Uinta National Forest Planning Area.

3.7.5 Regional Summary

As described in Section 3.7.4, Baseline Description, a wide variety of wildlife habitats and species is found within the wildlife analysis area. Many of these species occur over large geographic ranges in various habitat types and elevations. As described in Section 3.5, Vegetation, 20 vegetation communities provide wildlife habitat within the wildlife analysis area. Each Project region has several dominant vegetation communities (**Table 3.5-2**). Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant wildlife species utilize these areas. Wildlife species and habitats specific to each Project region are summarized below. The greatest diversity of wildlife species occurs in Region II, due to its wide range of elevations, topographic and climatic variation, and associated habitat diversity.

Terminals

Section 2.4.3.1 provides a description of the siting areas for the Northern Terminal, Southern Terminal, and Southern Terminal Alternate. The terminal sites have not yet been determined; however, it is known that the terminals would be constructed within the terminal siting areas. The Northern Terminal would be sited within the Northern Terminal siting area in Region I. The Southern Terminal would be sited within the Southern Terminal siting area in Region IV. The Southern Terminal Alternate would be sited within the same habitat types as the Southern Terminal and would be within the Southern Terminal Siting Area.

Section 2.1.2 provides an explanation of Project Design Options. Design Options 2 and 3 would involve construction of the Southern Terminal near the IPP at the border of Regions II and III. Impacts to vegetation communities under Design Options 2 and 3 are presented in **Table 3.5-8**. Total construction impacts can be calculated from the tables in Section 3.5.6 by adding the ROW clearing/trampling acreages and the facility acreages. Impact acreages remaining as a result of operations are presented for each vegetation community. Baseline descriptions for species that could occur in habitats at the terminal siting locations are presented first in this analysis because construction of these facilities would be necessary, regardless of the final alignment chosen.

Table 3.7-5 USFS Management Indicator Species for National Forests Traversed by the Project

Species Common Name (*Scientific Name*)	Habitat Association[1]	Ashley National Forest Region II	Dixie National Forest Region III	Fishlake National Forest Region II	Manti-La Sal National Forest Region II	Uinta National Forest Planning Area Region II
Mammals						
American beaver (*Castor canadensis*)	Open water, woody riparian and wetlands					MIS
Mule deer (*Odocoileus hemionus*)	Refer to Section 3.7.4.1	MIS; Big Game	MIS; Big Game	MIS; Big Game	MIS, Big Game	
Elk (*Cervus elaphus*)	Refer to Section 3.7.4.1	MIS; Big Game	MIS; Big Game	MIS; Big Game	MIS, Big Game	
Birds						
Northern goshawk (*Accipiter gentilis*)	Aspen forest and woodland, conifer forest, deciduous forest	BLM – WY, CO, UT	BLM – WY, CO, UT	BLM – WY, CO, UT	BLM – WY, CO, UT	BLM – WY, CO, UT
Golden eagle (*Aquila chrysaetos*)	Agricultural land, cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra	MIS; BLM-NV			MIS; BLM-NV	
Greater sage-grouse (*Centrocercus urophasianus*)	Sagebrush shrubland	FC; MIS; USFS; BLM – WY, CO, UT, NV; UT- Tier I				
White-tailed ptarmigan (*Lagopus leucura*)	Tundra	MIS				
Wild turkey (*Meleagris gallopavo*)	Agricultural land, aspen forest and woodland, deciduous forest, montane grassland, pinyon-juniper woodland, woody riparian and wetlands		MIS			
Red-naped sapsucker (*Sphyrapicus nuchalis*)	Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands	MIS				
Hairy woodpecker (*Picoides villosus*)	Agricultural land, aspen forest and woodland, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands			MIS		
American three-toed woodpecker (*Picoides dorsalis*)	Conifer forest					MIS; USFS; BLM-UT; UT- Tier II
Northern flicker (*Colaptes auratus*)	Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands		MIS			
Warbling vireo (*Vireo gilvus*)	Aspen forest and woodland, pinyon-juniper woodland, woody riparian and wetlands	MIS				
Western bluebird (*Sialia Mexicana*)	Agricultural land, aspen forest and woodland, montane grassland, pinyon-juniper woodland, woody riparian and wetlands			MIS		

Table 3.7-5 USFS Management Indicator Species for National Forests Traversed by the Project

Species Common Name (*Scientific Name*)	Habitat Association[1]	Ashley National Forest Region II	Dixie National Forest Region III	Fishlake National Forest Region II	Manti-La Sal National Forest Region II	Uinta National Forest Planning Area Region II
Mountain bluebird (*Sialia currucoides*)	Agricultural land, aspen forest and woodland, montane grassland, montane shrubland, pinyon-juniper woodland			MIS		
Sage thrasher (*Oreoscoptes montanus*)	Sagebrush shrubland			MIS, BLM-WY, NV-SCP; UT-Tier III; WY-Tier II		
Yellow warbler (*Dendroica petechial*)	Aspen forest and woodland, woody riparian and wetlands			MIS		
MacGillivray's warbler (*Oporornis tolmiei*)	Aspen forest and woodland, montane shrubland, woody riparian and wetlands			MIS		
Brewer's sparrow (*Spizella breweri*)	Sagebrush shrubland			MIS		
Vesper sparrow (*Pooecetes gramineus*)	Agricultural land, grassland, montane grassland, montane shrubland, sagebrush shrubland			MIS		
Song sparrow (*Melospiza melodia*)	Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, herbaceous wetland, montane shrubland, pinyon-juniper woodland, tundra, woody riparian and wetlands	MIS		MIS		
Lincoln's sparrow (*Melospiza lincolnii*)	Aspen forest and woodland, woody riparian and wetlands	MIS		MIS		

[1] Habitat association refers to vegetation communities as presented in **Table 3.7-2**. Status is defined as: BLM = BLM Sensitive; USFS = Forest Sensitive; MIS = USFS Management Indicator Species; UT-Tier I, II = Utah Sensitive Species (Tier I and Tier II species are defined in Utah's Comprehensive Wildlife Strategy); NV-SCP = Nevada Species of Conservation Priority, WY-SGCN = Wyoming Species of Greatest Conservation Need, (Tier I, II, and II are defined in the WFGD State Wildlife Action Plan).

3.7.5.1 Big Game Species

As described in Section 3.7.4, Baseline Description, seven big game species are known to occur within the big game analysis area. A summary of big game species occurrence and habitats by Project region, including the terminal locations, is provided below. The greatest diversity of big game species occurs in Regions I and II, due to elevation, topographical variation, and associated habitat diversity. **Tables 3.7-6** and **3.7-7** present big game habitats present at the Terminal siting areas.

Table 3.7-6 Big Game Habitat within the Northern Terminal Siting Area

Terminal	State	Species	Habitat Type	Acres within the Terminal Siting Area
Northern Terminal	Wyoming	Mule Deer	Crucial Winter/ Yearlong Range	3,333

Table 3.7-7 Big Game Habitat within the Southern Terminal Siting Areas

State	Species	Habitat Type	Acres within the Northern Terminal Siting Area	
Southern Terminal Located near IPP (Design Option 2)	Utah	Pronghorn	Crucial Yearlong Range	639
Substation Located near IPP (Design Option 3)	Utah	Pronghorn	Crucial Yearlong Range	639
Southern Terminal	Nevada	Desert bighorn sheep	Occupied habitat	19
Southern Terminal Alternate	Nevada	Desert bighorn sheep	Occupied habitat	19

Northern Terminal Siting Area

The Northern Terminal and associated facilities would be sited within mule deer crucial winter/yearlong range. Approximately 51 percent of the Northern Terminal siting area is within the saltbush shrubland community and 37 percent is within the sagebrush shrubland community.

Southern Terminal Siting Area

The Southern Terminal and associated facilities would be sited in desert bighorn sheep occupied habitat. The terminal siting area is almost entirely within the developed/disturbed land cover type. Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant wildlife species utilize these areas. Approximately 11 percent of the Southern Terminal siting area is within the desert shrubland community.

Southern Terminal Alternate Siting Area

The Southern Terminal Alternate and associated facilities would be sited in desert bighorn sheep occupied habitat. The terminal siting area is almost entirely within the developed/disturbed land cover type. Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant wildlife species utilize these areas. Approximately 11 percent of the Southern Terminal Alternate siting area is within the desert shruland community.

Southern Terminal located near IPP (Design Option 2)

The Southern Terminal located near IPP (Design Option 2) siting area is located within pronghorn crucial yearlong range. Approximately 51 percent of the Southern Terminal located near IPP (Design Option 2)

siting area is within the greasewood flat community and 44 percent is within the saltbush shrubland community.

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal for Design Option 2. The Southern Substation would be located within pronghorn crucial yearlong range. Approximately 51 percent of the Southern Substation located near IPP (Design Option 3) is within the greasewood flat community and 44 percent is within the saltbush shrubland community.

Region I

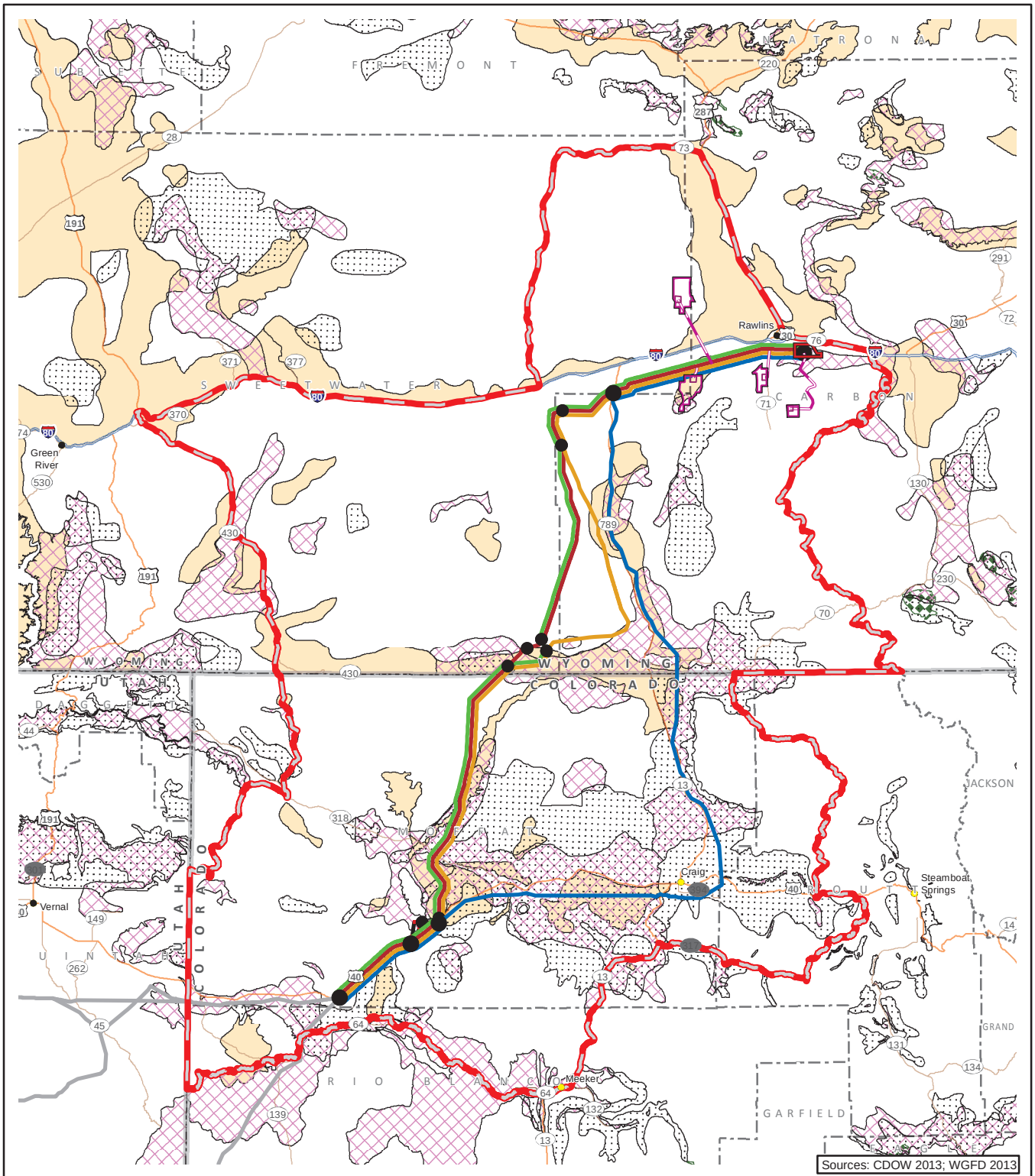
The Region I big game analysis area extends from the Northern Terminal siting area near Rawlins, Wyoming, southwest through northwestern Colorado. The dominant vegetation communities are sagebrush shrubland and saltbush shrubland. All vegetation communities except desert shrubland and tundra occur in Region I. A description of vegetation communities is presented in Section 3.5, Vegetation. Species that occur within the Region I big game analysis area include pronghorn, mule deer, white-tailed deer, elk, moose, Rocky Mountain bighorn sheep, black bear, and mountain lion. Pronghorn, mule deer, and elk crucial winter range occurs within the big game analysis area throughout most of southern Wyoming, northwestern Colorado, and northeastern Utah. In addition, Rocky Mountain bighorn sheep crucial winter range occurs within the big game analysis area in northeastern Utah. Seasonal habitats within the Region I big game analysis areas are presented in **Table 3.7-8** and in **Figure 3.7-1**.

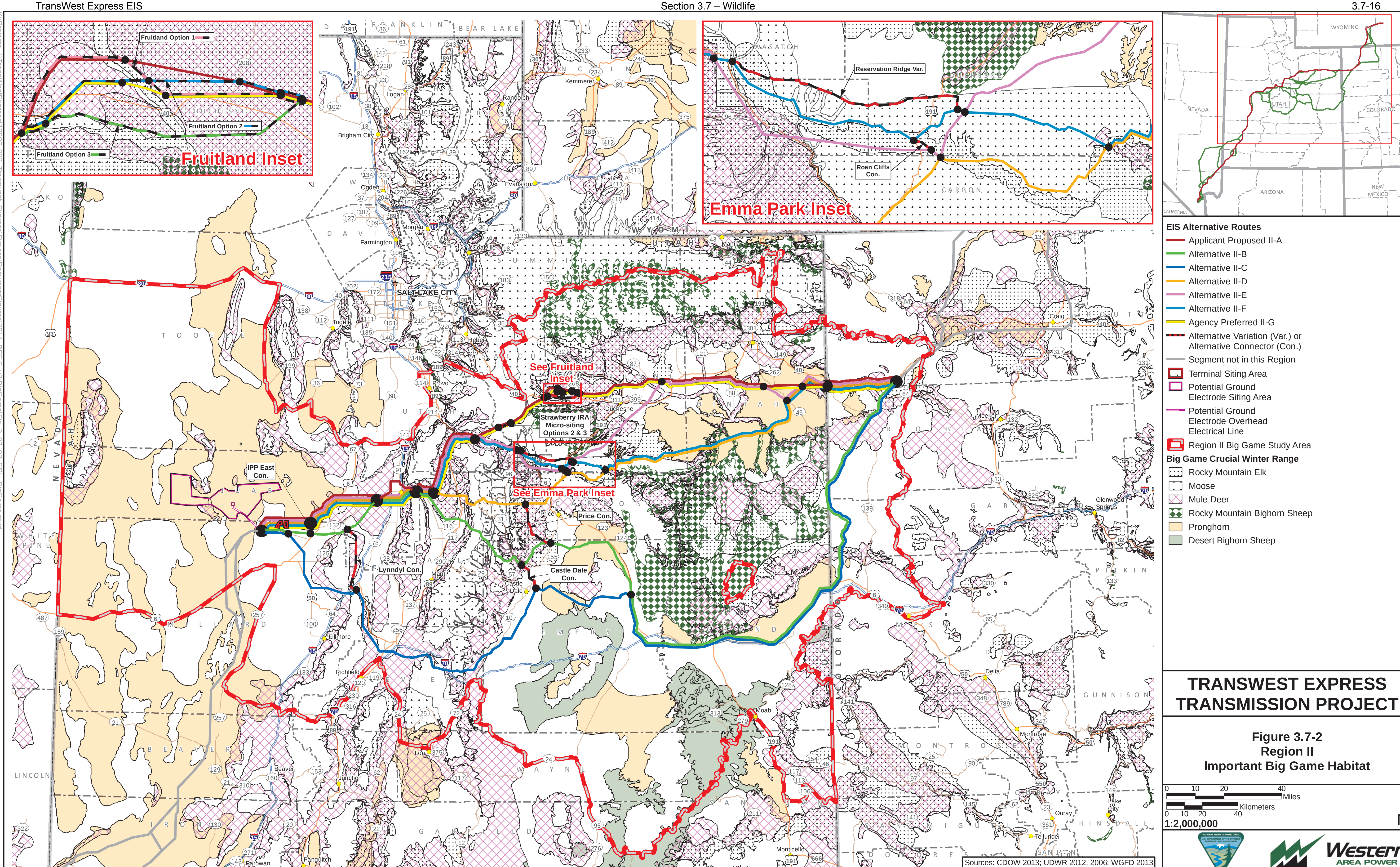
Table 3.7-8 Seasonal Habitats within the Region I Big Game Analysis Area

State	Species	Habitat	Acres within Big Game Analysis Area
Wyoming	Pronghorn	Crucial Winter/Yearlong Range	340,685
	Mule Deer	Crucial Winter; Crucial Winter/Yearlong Range	290,125
	Elk	Crucial Winter/Yearlong Range	141,965
Colorado	Pronghorn	Crucial Winter Range	296,556
	Mule Deer	Crucial Winter Range	718,018
	Elk	Crucial Winter Range	1,026,074
	Elk	Parturition Range	311,236

Region II

The Region II big game analysis area extends from northwestern Colorado to the IPP in western Utah. Vegetation in Region II is diverse. The dominant vegetation communities include sagebrush shrubland, saltbush shrubland, and pinyon-juniper woodland. All other vegetation communities except ephemeral wash also occur in Region II. A description of vegetation communities is presented in Section 3.5, Vegetation. Species that occur within the Region II big game analysis area include pronghorn, mule deer, elk, moose, Rocky Mountain bighorn sheep, desert bighorn sheep, black bear, and mountain lion. Pronghorn, mule deer, and elk crucial winter ranges occur within the big game analysis area in portions of western Colorado and eastern and central Utah. Moose crucial winter range occurs within the big game analysis area in central Utah in Sanpete County. Rocky Mountain bighorn sheep crucial winter range occurs within the big game analysis area, primarily along the I-70 corridor in Grand County and in southern Wasatch and Duchesne counties, Utah. Desert bighorn sheep crucial winter range occurs within the big game analysis area in Emery County, Utah. Big game seasonal habitats within the Region II big game analysis area are presented in **Table 3.7-9** and in **Figure 3.7-2**.


K:\Projects_4\TransWestExpress\12907_003_Transwest_Express\Figures\DocumentFigures\2014_PFEIS_v2\BigGameFig_3_07_01_SRL_BigGame.mxd
Rawlins
Green River
Vernal
Craig
Steamboat Springs
Meeker
WYOMING
COLORADO
UTAH
SWEETWATER
CARBON
JACKSON
GRAND
GARFIELD
MOFFAT
RIO BLANCO
UINTAH
DAGGETT
SUBLETTE
FREMONT
NATRONA
Sources: CDOW 2013; WGFD 2013
EIS Alternative Routes
Applicant Proposed I-A
Agency Preferred I-B
Alternative I-C
Alternative I-D
Alternative Variation (Var.) or Alternative Connector (Con.)
Segment not in this Region
Terminal Siting Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Region I Big Game Analysis Area
Big Game Crucial Range (CO-Severe Winter; WY-Winter/Yearlong)
Rocky Mountain Elk
Mule Deer
Rocky Mountain Bighorn Sheep
Pronghorn
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.7-1
Region I
Important Big Game Habitat
0 5 10 20 Miles
0 5 10 20 km
1:1,500,000
N
Western AREA POWER ADMINISTRATION
Exported On: 2/10/2015



TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 3.7-2
Region II
Important Big Game Habitat

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Table 3.7-9 Seasonal Habitats within the Region II Big Game Analysis Area

State	Species	Habitat Type	Acres within Big Game Analysis Area
Colorado	Pronghorn	Crucial Winter Range	56,577
	Mule Deer	Crucial Winter Range	253,750
	Elk	Crucial Winter Range	83,886
	Elk	Parturition Range	44,664
Utah	Pronghorn	Crucial Yearlong; Substantial Yearlong Range	1,446,203
	Pronghorn	Parturition Range	1,383,671
	Mule Deer	Crucial Winter Range	2,190,378
	Mule Deer	Parturition Range	2,108,705
	Elk	Crucial Winter Range	1,319,471
	Elk	Parturition Range	126,446
	Moose	Occupied	668,312
	Moose	Parturition Range	172,057
	Rocky Mountain Bighorn Sheep	Crucial Yearlong Range	728,851
	Desert Bighorn Sheep	Occupied habitat	250,085

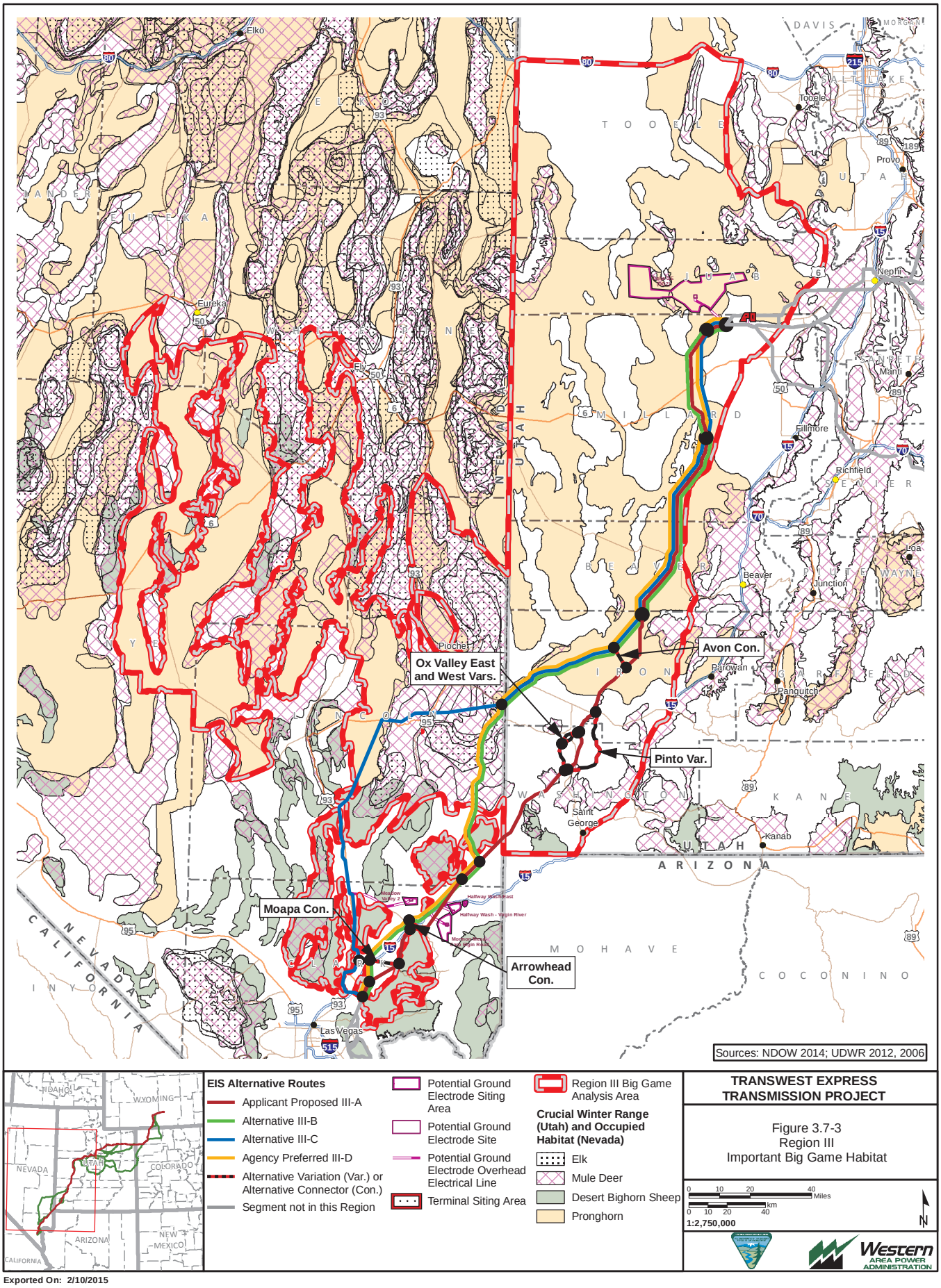
Region III

The Region III big game analysis area extends from the IPP in western Utah to a point northwest of Las Vegas in Clark County, Nevada. In Region III, desert shrubland is the dominant community. All other vegetation communities, except tundra, occur in Region III. A description of vegetation communities is presented in Section 3.5, Vegetation. Species that occur within the Region III big game analysis area include pronghorn, mule deer, elk, desert bighorn sheep, black bear, and mountain lion. Mule deer crucial winter range and pronghorn crucial yearlong range occur within the big game analysis area throughout Region III in southwestern Utah and eastern Nevada. Desert bighorn sheep occupied habitat occurs within the big game analysis area in southern Nevada in Clark and Lincoln counties. Big game seasonal habitats within the Region III big game analysis area are presented in **Table 3.7-10** and in **Figure 3.7-3**.

Table 3.7-10 Seasonal Habitats within the Region III Big Game Analysis Area

State	Species	Habitat Type	Acres within Big Game Analysis Area
Utah	Pronghorn	Crucial Yearlong Habitat	2,021,353
	Mule Deer	Crucial Winter Habitat	239,994
	Desert Bighorn Sheep	Occupied	21,937
Nevada	Pronghorn	Occupied[1]	213,009
	Mule Deer	Occupied[1]	485,910
	Desert Bighorn Sheep	Occupied[1]	624,008
	Elk	Occupied[1]	305, 438

[1] NDOW classifies desert bighorn sheep habitat as occupied, unoccupied, and potential habitat. Similar nomenclature has been applied to other big game specie for consistency.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Elko
Eureka
Ely
Las Vegas
Tooele
Provo
Nephi
Manti
Fillmore
Richfield
Loa
Beaver
Junction
Parowan
Panguitch
Saint George
Kanab
Pioche
Ox Valley East and West Vars.
Avon Con.
Pinto Var.
Moapa Con.
Arrowhead Con.
Sources: NDOW 2014; UDWR 2012, 2006
EIS Alternative Routes
Applicant Proposed III-A
Alternative III-B
Alternative III-C
Agency Preferred III-D
Alternative Variation (Var.) or Alternative Connector (Con.)
Segment not in this Region
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Terminal Siting Area
Region III Big Game Analysis Area
Crucial Winter Range (Utah) and Occupied Habitat (Nevada)
Elk
Mule Deer
Desert Bighorn Sheep
Pronghorn
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.7-3
Region III
Important Big Game Habitat
1:2,750,000
Western AREA POWER ADMINISTRATION
Exported On: 2/10/2015

Region IV

The Region IV big game analysis area extends from northwest of Las Vegas to Marketplace, Nevada. There is less vegetation diversity in Region IV than in the other Project regions. The dominant vegetation community is desert shrubland. The remaining vegetation communities include: barren/sparsely vegetated, cliff and canyon, desert shrubland, ephemeral wash, grassland, herbaceous wetland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands. A description of these communities is presented in Section 3.5, Vegetation. Species that occur within the Region IV big game analysis area include desert bighorn sheep and mountain lion. Occupied habitat for desert bighorn sheep occurs within the big game analysis area in the mountain ranges surrounding Las Vegas, Nevada. Desert bighorn sheep habitat within the big game analysis area is presented in **Table 3.7-11** and in **Figure 3.7-4**.

Table 3.7-11 Desert Bighorn Sheep Habitat within the Region IV Big Game Analysis Area

State	Species	Habitat Type	Acres within Big Game Analysis Area
Nevada	Desert Bighorn Sheep	Occupied[1]	267,799

[1] NDOW classifies desert bighorn sheep habitat as occupied, unoccupied, and potential habitat.

3.7.5.2 Small Game Species

As described in Section 3.7.4, Baseline Description, numerous small game species inhabit the wildlife analysis area. A summary of small game species potential occurrence at the terminal siting areas and by Project region is provided below. The greatest diversity of small game species occurs in Regions I and II due to elevation, topographical variation, and associated habitat diversity.

Northern Terminal Siting Area

Representative small game species that may inhabit the Northern Terminal siting area include upland game birds such as the mourning dove; small game mammals such as the desert cottontail, black-tailed jackrabbit, and white-tailed jackrabbit; furbearers such as the American badger, bobcat, and coyote; and waterfowl such as the mallard, Canada goose, blue-winged teal, and pintail.

Southern Terminal and Southern Terminal Alternate Siting Area

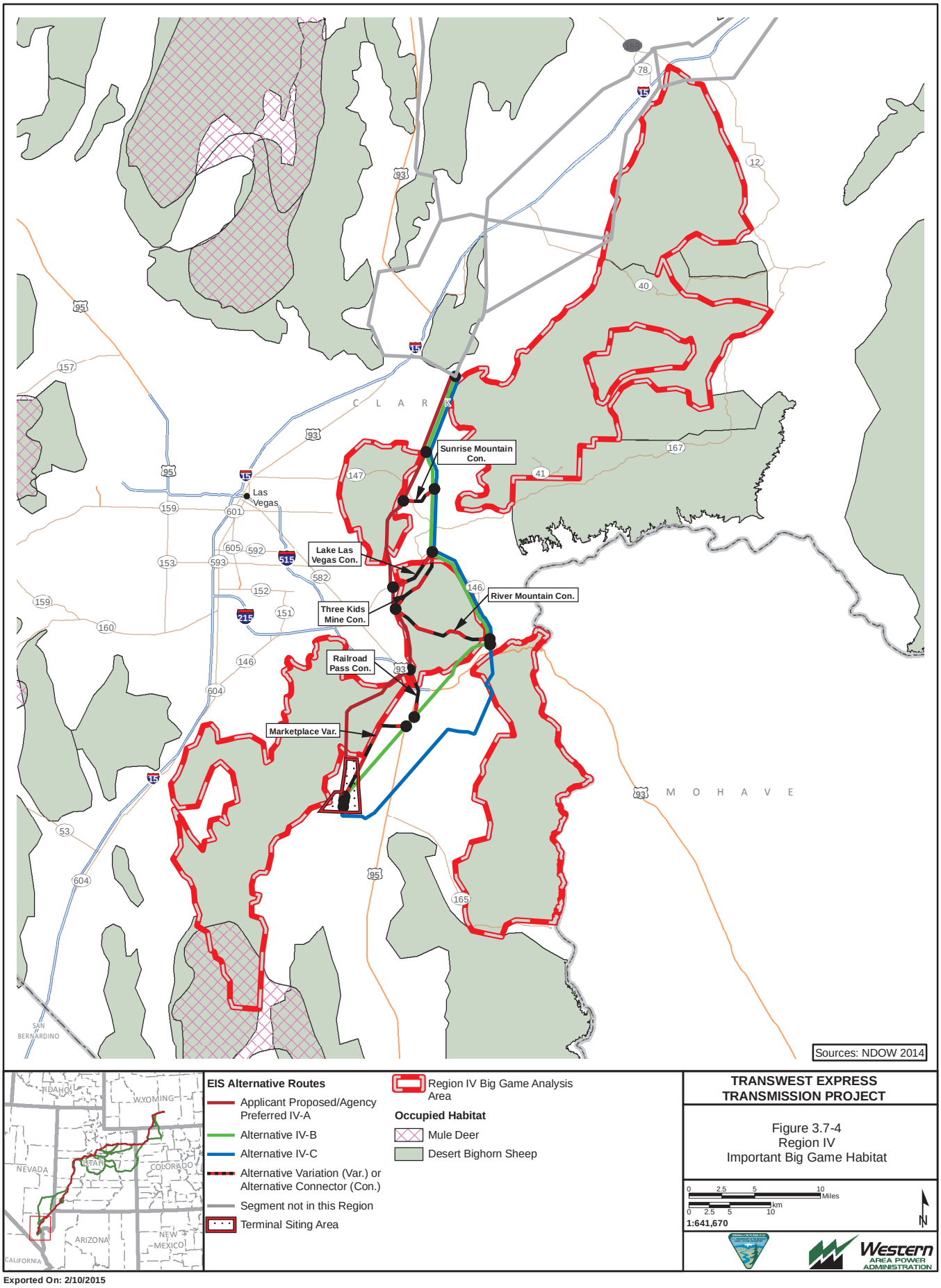
Representative small game species that may inhabit the Southern Terminal and Southern Terminal Alternate siting area includes upland game birds such as the Gambel's quail, chukar, and mourning dove; small game mammals such as the desert cottontail; furbearers such as the raccoon and coyote; and waterfowl such as the mallard, Canada goose, green-winged teal, gadwall, and pintail.

Southern Terminal located near IPP (Design Option 2)

Representative small game species that may inhabit the Southern Terminal located near IPP (Design Option 2) siting area include upland game birds such as the chukar, ring-necked pheasant, wild turkey, Gambel's quail, California quail, band-tailed pigeon, and mourning dove; small game mammals such as the desert cottontail and white-tailed jackrabbit; furbearers such as the bobcat, red fox, and coyote; and waterfowl such as the mallard, Canada goose, cinnamon teal, northern shoveler, and pintail.

Substation located near IPP (Design Option 3)

The Substation located near IPP (Design Option 3) would be sited entirely within the boundaries of the Southern Terminal (Design Option 2) and representative small game species would be similar.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Sunrise Mountain Con.
Lake Las Vegas Con.
River Mountain Con.
Three Kids Mine Con.
Railroad Pass Con.
Marketplace Var.
Las Vegas
C L A R K
M O H A V E
SAN BERNARDINO
Sources: NDOW 2014
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
EIS Alternative Routes
Applicant Proposed/Agency Preferred IV-A
Alternative IV-B
Alternative IV-C
Alternative Variation (Var.) or Alternative Connector (Con.)
Segment not in this Region
Terminal Siting Area
Region IV Big Game Analysis Area
Occupied Habitat
Mule Deer
Desert Bighorn Sheep
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.7-4
Region IV
Important Big Game Habitat
0 2.5 5 10 Miles
0 2.5 5 10 km
1:641,670
N
Western AREA POWER ADMINISTRATION
Exported On: 2/10/2015

Region I

Representative small game species that may inhabit the Region I wildlife analysis area include upland game birds such as the dusky grouse, ruffed grouse, and mourning dove; small game mammals such as the desert cottontail, black-tailed jackrabbit, and white-tailed jackrabbit; furbearers such as the beaver, American badger, bobcat, and coyote; and waterfowl such as the mallard, Canada goose, blue-winged teal, and northern pintail. Region I is located within the Central Flyway in portions of Wyoming near Rawlins and the Pacific Flyway in southern Wyoming and northwestern Colorado. Due to the arid climate and limited water sources in Region I, waterfowl species are typically found in close relation to wetlands and riparian areas, such as Muddy Creek in Wyoming, the Little Snake and Yampa rivers in Colorado, and the Green River and its tributaries in northeastern Utah.

Region II

Representative small game species that may inhabit the Region II wildlife analysis area include upland game birds such as the dusky grouse, ruffed grouse, chukar, ring-necked pheasant, wild turkey, California quail, band-tailed pigeon, and mourning dove; small game mammals such as the desert cottontail and snowshoe hare; furbearers such as the beaver, muskrat, bobcat, red fox, and coyote; and waterfowl such as the mallard, Canada goose, green-winged teal, gadwall, and northern pintail. Region II is located within the Pacific Flyway. The Ouray NWR is located in the wildlife analysis area near the Green River in Uintah County, Utah. The Ouray NWR area provides important habitat for waterfowl that migrate along the Green River riparian corridor in eastern Utah (USFWS 2011). The White River and Douglas Creek also provide important habitat for small game species and waterfowl.

Region III

Representative small game species that may inhabit the Region III wildlife analysis area include upland game birds such as the dusky grouse, chukar, wild turkey, California quail, Gambel's quail, band-tailed pigeon, and mourning dove; small game mammals such as the desert cottontail and white-tailed jackrabbit; furbearers such as the American badger, bobcat, red fox, and coyote; and waterfowl such as the mallard, Canada goose, northern shoveler, and northern pintail. Region III is located within the Pacific Flyway. Due to the arid climate and limited water sources in Region III, small game species are typically found in close relation to wetlands and riparian areas such as streams and lakes in the Dixie National Forest in Washington County, Utah, and along the Muddy River in Clark County, Nevada. In addition, small game species in Region III frequent natural springs and seeps.

Region IV

Representative small game species that may inhabit the Region IV wildlife analysis area include upland game birds such as the Gambel's quail, chukar, and mourning dove; small game mammals such as the desert cottontail; furbearers such as the raccoon and coyote; and waterfowl such as the mallard, Canada goose, northern pintail, and northern shoveler. Region IV is located within the Pacific Flyway. Due to a lack of water sources and riparian and wetland habitats within the Region IV wildlife analysis area, most waterfowl use is limited to migrating individuals that utilize areas around springs, seeps, and water developments, and the Lake Mead NRA in eastern Clark County, Nevada. The Lake Mead NRA is managed by the NPS. The NPS is responsible for management of wildlife species on NPS-managed lands (NPS 2006).

3.7.5.3 Nongame Species

As described in Section 3.7.4, Baseline Description, numerous nongame species inhabit the wildlife analysis area. A summary of nongame species potential occurrence at the terminal siting areas and by Project region is provided below. The greatest diversity of nongame species occurs in Regions I and II due to the wide range of elevations, topographic and climatic variation, and associated habitat diversity. Migratory birds are analyzed in Section 3.22, Migratory Birds.

Northern Terminal Siting Area

Small Mammals

Representative nongame small mammal species that may inhabit the Northern Terminal siting area include the little brown myotis, Merriam's shrew, golden-mantled ground squirrel, least chipmunk, northern pocket gopher, Ord's kangaroo rat, white-tailed prairie dog, Wyoming ground squirrel, Wyoming pocket gopher, and olive-backed pocket mouse (Armstrong et al. 2011).

Reptiles

Representative reptile species that may inhabit the Northern Terminal siting area include the sagebrush lizard, short-horned lizard, Great Basin gopher snake, bull snake, wandering garter snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999).

Southern Terminal Siting Area

Small Mammals

Representative nongame small mammal species that may inhabit the Southern Terminal siting area include the little brown myotis, Merriam's kangaroo rat, desert pocket mouse, white-tailed antelope squirrel, Botta's pocket gopher, brush mouse, and canyon mouse (Hall 1995).

Reptiles

Representative reptile species that may inhabit the Southern Terminal siting area include the western fence lizard, common side-blotched lizard, sidewinder, southwestern speckled rattlesnake, and Mojave rattlesnake (San Diego Natural History Museum [SDNHM] 2011).

Southern Terminal Alternate

Representative nongame species that may inhabit the Southern Terminal Alternate siting area would be similar to those at the Southern Terminal siting area.

Southern Terminal located near IPP (Design Option 2)

Small Mammals

Representative nongame small mammal species that may inhabit the Southern Terminal located near IPP (Design Option 2) include the little brown myotis, white-tailed antelope squirrel, northern pocket gopher, Ord's kangaroo rat, and plains pocket mouse (Armstrong et al. 2011).

Reptiles

Representative reptile species that may inhabit the Southern Terminal located near IPP (Design Option 2) siting area include the sagebrush lizard, short-horned lizard, rubber boa, bull snake, wandering garter snake, and western rattlesnake (Hammerson 1999; Sutter et al. 2005).

Substation located near IPP (Design Option 3)

The Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal located near IPP (Design Option 2) and representative species would be similar.

USFS Management Indicator Species

Terminal siting areas would not be located within National Forests; therefore, no MIS are addressed for these facilities.

Region I

Small Mammals

Sagebrush shrubland is the dominant vegetation community in Region I. Representative nongame small mammal species that may inhabit the Region I wildlife analysis area include the little brown myotis, Merriam's shrew, golden-mantled ground squirrel, least chipmunk, northern pocket gopher, Ord's kangaroo rat, white-tailed prairie dog, Wyoming ground squirrel, Wyoming pocket gopher, and olive-backed pocket mouse (Armstrong et al. 2011).

Reptiles

Sagebrush shrubland is the dominant vegetation community in Region I. Representative reptile species that may inhabit the Region I wildlife analysis area include the sagebrush lizard, short-horned lizard, Great Basin gopher snake, bull snake, wandering garter snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999).

USFS Management Indicator Species

No National Forests are traversed by the Project in Region I; therefore, no MIS are addressed in this section.

Region II

Small Mammals

The primary vegetation communities in Region II include sagebrush shrubland, saltbush shrubland, and pinyon-juniper woodland. Representative nongame small mammal species that may inhabit the wildlife analysis area in Region II include the little brown myotis, masked shrew, white-tailed antelope squirrel, Uintah chipmunk, northern pocket gopher, Ord's kangaroo rat, and plains pocket mouse (Armstrong et al. 2011).

Reptiles

The primary vegetation communities in Region II include sagebrush shrubland, saltbush shrubland, and pinyon-juniper woodland. Representative reptile species that inhabit the Region II wildlife analysis area include the sagebrush lizard, short-horned lizard, rubber boa, bull snake, wandering garter snake, and western rattlesnake (Hammerson 1999; Sutter et al. 2005).

USFS Management Indicator Species

Four National Forests would be traversed by the Project in Region II. Management Indicator Species for each of these forests are presented in **Table 3.7-5**.

Region III

Small Mammals

The Region III wildlife analysis area encompasses a wide variety of habitats for small mammals (e.g., sagebrush shrubland, grassland, desert shrubland); however, the primary vegetation community is desert shrubland. Representative nongame small mammal species that may inhabit the Region III wildlife analysis area include the little brown myotis, Merriam's shrew, white-tailed antelope squirrel, cliff chipmunk, Botta's pocket gopher, Ord's kangaroo rat, and Great Basin pocket mouse (Hall 1995).

Reptiles

The primary habitat in Region III is desert shrubland. Representative reptile species that may inhabit the Region III wildlife analysis area include the coachwhip, common kingsnake, and glossy snake (Sutter et al. 2005). The desert tortoise also occurs in Region III and this species is addressed in Section 3.8, Special Status Wildlife Species.

USFS Management Indicator Species

The Dixie National Forest would be traversed by the Project in Region III. MIS for this forest are presented in **Table 3.7-5**.

Region IV

Small Mammals

The primary vegetation community in Region IV is desert shrubland. Representative nongame small mammal species that may inhabit the Region IV wildlife analysis area include the little brown myotis, desert shrew, white-tailed antelope squirrel, Botta's pocket gopher, brush mouse, and canyon mouse (Hall 1995).

Reptiles

The primary vegetation community in Region IV is of desert shrubland. Representative reptile species that may inhabit the Region IV wildlife analysis area include the western fence lizard, common side-blotched lizard, and western rattlesnake (SDNHM 2011).

USFS Management Indicator Species

No national forests are traversed by the Project in Region IV; therefore, no MIS are addressed in this section.

3.7.6 Impacts to Wildlife Species

Direct and indirect impacts to wildlife species have been calculated based on the methodology described in Chapter 3.0, Introduction. Impacts resulting from construction and operation activities would occur within the refined transmission corridor and could extend to within 1 mile on each side of the preliminary engineered alignment. The 250-foot-wide transmission line ROW would be located within the refined transmission corridor. The precise location of Project components is not yet known. However, the refined corridors would contain transmission line infrastructure, including towers and conductors, pulling and tensioning sites, and access roads where practicable, depending on site-specific resource and engineering constraints. Disturbance areas for access roads and temporary work areas such as concrete batch plants, staging areas, and other facilities would generally be confined to within 1 mile on each side of the preliminary engineered alignment. Temporary work areas would be removed and their sites reclaimed following construction. The impact analysis area also includes the siting areas for terminals and ground electrode systems. The identification of habitats potentially impacted by Project activities is based on the vegetation communities that support different wildlife species and species groups seasonally or throughout the year.

Several small micro-siting adjustments to the proposed alternative routes in Regions I, II, and III have been included in this impact analysis and are described in detail in Section 2.5.1. These adjustments are located along Alternatives I-A, I-B, I-C, I-D, II-A, II-F, II-G, III-A, IV-A, and IV-B. Alternatives I-B and I-D have been widened slightly to accommodate possible micro-siting adjustments to avoid sage-grouse habitat. Alternatives I-A, I-B, and II-F have been adjusted slightly to address resource concerns. The slight changes in impact acreages for micro-siting, widening, reroutes, or merged alternative segments have been analyzed and are reported only if they are expected to cause more than incremental differences. These project adjustments have been incorporated to address concerns regarding USFS IRAs, BLM designated utility corridors, and greater sage-grouse potential habitat.

The Fruitland Micro-siting Options were developed in consideration of impacts to greater sage-grouse habitat, private land development, and existing conservation easements. These options range in length from approximately 13 to 15 miles and would impact the same types of vegetation communities as comparable segments of Alternatives II-A and II-G. The Strawberry IRA Micro-siting Options would avoid or minimize impacts to national forest IRAs along Alternatives II-A and II-G. The slight changes in impact

acreages for micro-siting, widening, reroutes, or merged alternative segments have been analyzed and are reported only if they are expected to cause more than incremental differences.

Direct impacts, such as removal or alteration of habitat, expected from each alternative route within each Project region are analyzed based on the 250-foot-wide transmission line ROWs and preliminary engineered alignments. Although the 250-foot-wide direct disturbance corridor could shift within the larger refined transmission corridor based on site-specific conditions and final engineering design, for the purposes of this analysis, it is assumed that the disturbance corridor is centered on the identified alignment. Direct and indirect impacts to wildlife species resulting from access road construction, construction and use of temporary facilities such as concrete batch plants, and habitat degradation due to human presence or construction noise are calculated based on the methodology described in Chapter 3.0, Introduction. Wildlife habitat associations are based on the vegetation communities identified in **Tables 3.7-2** and **3.7-3** that support various wildlife species seasonally or throughout the year.

Wildlife-related issues addressed by this impact assessment were determined through the public scoping process and in consultation with BLM, Bureau of Reclamation, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD. The primary impact issues and analysis considerations for wildlife are listed in **Table 3.7-12**.

Table 3.7-12 Relevant Analysis Considerations for Wildlife Species

Resource Topic	Analysis Considerations and Relevant Assumptions
Habitat loss, alteration, degradation, and fragmentation	• Acres of habitat for wildlife species located within the 250-foot-wide transmission line ROW and disturbance for access roads and temporary work areas are quantified. • Species-specific avoidance measures are discussed. • The degree to which the loss or fragmentation of habitat would affect individuals and whether these effects could impact populations of affected species are qualitatively discussed. • Changes in vegetation communities that influence wildlife habitat are referenced. • The timeline for vegetation communities to recover to baseline levels is estimated. • Habitat disturbance is related to overall habitat availability in the respective analysis areas. • Impacts resulting from habitat loss and fragmentation are evaluated using the best available literature. • The lost opportunity for bird conservation represented by fragmentation and other Project impacts in BHCAs is quantified as the acreages of construction, operation, and indirect impacts to BHCAs traversed by the alternative routes and associated facilities.
Loss of or injury to a species, displacement of individuals, and loss of breeding success from exposure to increased noise and human activity	• Impacts of bird and bat collisions from transmission lines on overall populations are evaluated in qualitative terms; destruction of nests, eggs, and hatchlings from vegetation clearing activities. • Electrocution of birds is discussed. • A qualitative discussion of how construction and operation activities may displace or impact breeding activity for wildlife species is included. • The wildlife/vehicle collision potential is described in both quantitative and qualitative terms.
Potential impacts of increased perches/ predation from Project infrastructure	• Impacts of increased predation by raptors and corvids (e.g., ravens, crows) on wildlife species is evaluated in qualitative terms.

Impacts to wildlife species and habitats would be avoided or minimized through the implementation of the following Project design features, agency BMPs, and proposed mitigation measures (**Appendix C**). These measures would apply during all phases of the Project through decommissioning and reclamation.

- WWEC BMPs:
  - ECO-1/ECO-2/ECO-4/ECO-6/ECO-7/ECO-8 (protection of sensitive wildlife and habitats);
  - FIRE-1/FIRE-2 (fire management and fuel strategies);
  - NOISE-2 (noise reduction strategy);
  - REST-1 (topsoil salvage, seeding with weed-free, native seeds, and restoring pre-development contours); and
  - REST-2 (restoring vegetation to values commensurate with the ecological setting).
- Agency BMPs: All applicable State and Federal agency No Surface Occupancy (NSO) restrictions, Conditional Surface Occupancy (CSO) restrictions, and Timing Limitations (TL) as outlined in **Appendix C**.
- Project Design Features:
  - TWE-1: The TWE Project will be planned, constructed, operated, and decommissioned in accordance with the agencies' RODs, the BLM's ROW grant stipulations, USFS Special Use Permit stipulations, and requirements of other permitting agencies.
  - TWE-2: The Applicant will comply with all applicable environmental laws and regulations. Applicable laws and regulations may include, but are not limited to, the CWA Section 303(d) and Section 404; the Wild and Scenic Rivers (WSRs) Act, Section 3(a) or 2(a) ii; the ESA, Section 7; the NHPA, Section 106; and the Native American Graves Protection and Repatriation Act (NAGPRA). Compliance with all applicable laws and regulations will be documented in the Final POD/COM Plan.
  - TWE-4: Prior to construction, all personnel will be instructed on the protection of cultural, paleontological, ecological, and other natural resources in accordance with the COM Plan provisions. To assist in this effort, the construction contract would address: (a) federal, state, and tribal laws regarding cultural resources, fossils, plants, and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.
  - TWE-13: In construction areas (e.g., marshalling yards, structure sites, spur roads from existing access roads) where ground disturbance is significant or where re-contouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches.
  - TWE-14: The POD will show the location of borrow sites, from which material will be obtained. Borrow pits will be stripped of topsoil to a depth of approximately 6 inches. Stripped topsoil will be stockpiled and, upon completion of borrow excavation, spread to a uniform depth of 6 inches over areas of borrow pits from which it was removed. Before replacing topsoil, excavated surfaces will be reasonably smooth and uniformly sloped. The sides of borrow pits will be brought to stable slopes with slope intersection shaped to carry the natural contour of adjacent undisturbed terrain into the pit to give a natural appearance. When necessary, borrow pits will be drained by open ditches to prevent accumulation of standing water.
  - TWE-16: Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be repaired or replaced, if damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
  - TWE-26: The POD will include a Reclamation Plan and a Noxious Weed Management Plan. The Reclamation Plan will address plant removal and selective clearing. The Noxious Weed Management Plan will be developed in accordance with appropriate land

management agencies' standards, and will be consistent with applicable regulations and agency permitting stipulations for the control of noxious weeds and invasive species (EO 13112). Included in the Noxious Weed Management Plan will be stipulations regarding construction, restoration, and operation (use of weed-free materials, washing of equipment, etc.).

- TWE-27: In construction areas where re-contouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for re-sprouting.
- TWE-28: Clearing will be performed so as to minimize marring and scarring the countryside and preserve the natural beauty to the maximum extent possible. Except for danger trees, no clearing will be performed outside the limits of the ROW.
- TWE-29: The POD will include a Wildlife and Plant Conservation Measures Plan, which will identify important, sensitive, or unique habitats and BLM sensitive, USFS sensitive, and state-listed species in the vicinity of the TWE Project. The POD will identify measures to be taken to avoid, minimize, or mitigate impacts to these habitats and species.
- TWE-30: In applicable areas, the TWE Project will be designed to meet or exceed the raptor safe design standards described in the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee [APLIC] 2006).
- TWE-31: Mitigation measures that will be developed during the consultation period with the BLM and the USFWS under Section 7 of the ESA will be adhered to, along with mitigation developed in conjunction with state authorities.
- TWE-32: Seasonal restrictions may be implemented in certain areas to mitigate impacts on wildlife. With the exception of emergency repair situations, the activities of ROW construction, restoration, maintenance, and decommissioning will be modified or discontinued in designated areas during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed or listed threatened and endangered, or other sensitive animal species, as required by permitting agencies. Potential seasonal restrictions and avoidance buffers for nesting raptors will be identified in the Draft EIS. The Wildlife and Plant Conservation Measures Plan will incorporate the seasonal restrictions and stipulations contained in the federal agency RODs.
- TWE-33: Prior to the start of construction, the Applicant will provide training to all Contractor and Subcontractor personnel and others involved in construction activities where/if there is a known occurrence of protected species or habitat in the construction area. Sensitive areas will be considered avoidance areas. Prior to any construction activity, avoidance areas will be marked on the ground and maintained through the duration of the Contract. The Applicant will remove markings during or following final inspection of the Project.
- TWE-34: If evidence of a protected species not previously identified or known is found in the Project area, the Contractor will immediately notify the appropriate land management agencies and provide the location and nature of the findings.

- Proposed Mitigation Measures and Effectiveness:
  - ***WLF- 3:*** *To ensure wildlife access to existing wildlife water developments (e.g., "guzzlers"), TransWest would avoid impacts to these developments to the extent possible during final project siting and development. TransWest would be required to offset the loss of any permanently impacted wildlife water developments by installing new developments of equal capacity, in coordination with the appropriate state wildlife agency.*
  - *Effectiveness*: This proposed mitigation measure would ensure continued wildlife access to wildlife water developments.

- ***WLF-6:*** *To minimize fragmentation impacts to forested habitats, TransWest would employ vegetation management Level 3, as described in the Project Vegetation Management Plan, in aspen forest and woodland, conifer forest, deciduous forest, and pinyon-juniper woodland habitat types crossed by the 250-foot-wide transmission line ROW on public lands. To offset the impact of removal of wooded debris and snags within the construction ROW, TransWest would be required to leave downed wooded debris in place to the extent possible.*
- *Effectiveness*: This proposed mitigation measure would minimize habitat fragmentation in forested areas and would provide downed wooded debris for production of prey species.
- ***WLF-8:*** *To minimize collision potential for avian species, TransWest would design the Project to meet the standards described in the Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012).*
- *Effectiveness*: This proposed mitigation measure would minimize avian collision potential.
- ***WLF-9*****:** *To minimize collision potential for avian species, TransWest would be required to install avian flight diverters on all guy wires in all areas of priority migratory bird habitats which include IBAs, BHCAs, riparian crossings, and other sensitive habitats identified in coordination with land management, USFWS, and applicable state wildlife agencies. TransWest also would be required to install flight diverters on guyed structures at tower locations identified by post construction monitoring as having high collision potential.*
- *Effectiveness*: This proposed mitigation measure would minimize avian collision potential.

In addition to the measures described above, the Applicant-prepared Habitat Equivalency Analysis (HEA) and compensatory mitigation plan for greater sage-grouse habitat also would benefit other wildlife species that occur within occupied greater sage-grouse habitat. These vegetation communities include sagebrush shrubland, and areas of herbaceous wetland, riparian, and grassland habitats adjacent to occupied habitat. Details regarding the HEA and compensatory mitigation plan are discussed in Section 3.8.6, Impacts to Special Status Wildlife Species, **Appendix J** of this EIS, and Appendix K of the POD (**Appendix D** of the EIS). The application of proposed mitigation measure **SSWS-5,** as discussed in Section 3.8.6, Impacts to Special Status Wildlife Species, also would minimize impacts to other wildlife species.

The impact analysis for wildlife species assumes that the BLM and USFS would continue to manage wildlife habitats in coordination with CPW, NDOW, UDWR, and WGFD. Further assumptions are that the design features and BMPs committed to by TransWest would be implemented under all alternatives.

3.7.6.1 Impacts to Wildlife Species from Terminal Construction and Operation

Section 2.4, Elements Common to All Action Alternatives, describes the Northern Terminal, Southern Terminal, Southern Terminal Alternate, Southern Terminal located near IPP (Design Option 2), and Southern Substation located near IPP (Design Option 3). Vegetation communities potentially impacted at terminal siting areas are presented below. No national forests would be impacted by terminal construction or operation.

Potential impacts to wildlife species at terminal sites can be grouped into two main categories: construction and operation. Construction-related impacts are primarily habitat loss, fragmentation, and direct wildlife mortalities such as those resulting from vehicle collisions and crushing of nests or burrows. Construction impacts account for all disturbance during construction of the Project (e.g., clearing of vegetation for footing construction, upgrading access roads, etc.).

Operation impacts are defined as impacts that remain after interim reclamation is complete. Operation impacts would last at least as long as the Project is in operation and maintenance activities are conducted. Construction-related impacts are typically short-term, whereas operation impacts are typically long-term. Examples of potential operation impacts include habitat disturbance in areas where facilities

would be sited; periodic vegetation management activities; wildlife mortalities that occur as a result of electrocution and collisions with Project facilities or maintenance vehicles or equipment; increased risk of wildland fires; and habitat degradation resulting from increased noise and human activity. Although there is some potential for wildlife electrocutions to occur at the Project terminals, electrocutions associated with substation operations are uncommon (APLIC 2006). New substations can use a combination of framing and covering to prevent contacts by birds and other wildlife. The Applicant's commitment to using raptor-safe designs (TWE-30) will ensure that electrocution-related impacts to wildlife are avoided or minimized at the Project terminals. During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until after the end of the Project's design life (decommissioning).

Impacts to habitat can be further categorized as direct and indirect. Direct habitat impact results when habitat is destroyed or converted to a form that is unsuitable for the impacted species. The primary potential indirect impact is wildlife avoidance (displacement) of otherwise suitable habitat in and around terminal sites during construction and operation. The primary operation-related impact associated with the terminals is likely to be wildlife mortality as a consequence of collision with Project components. Other potential impacts include avoidance of otherwise suitable habitat due to the presence of the terminal facility and transmission line; avoidance of otherwise suitable habitat due to increased predation from perching raptors; and avoidance due to the increased noise and human presence that result from maintenance activities.

Northern Terminal

Habitat Disturbance and Fragmentation

The existing conditions at the Northern Terminal siting area relative to potential wildlife habitat can be characterized as highly disturbed and fragmented. Located immediately between the urbanized areas of Sinclair and Rawlins, Wyoming, the siting area exhibits multiple types of anthropogenic disturbance. The major source of disturbance is the I-80 and SH-76 corridor located approximately 2.2 miles to the north. This highly active corridor provides constant disturbance from vehicle traffic and fragments the landscape for several miles extending from the roads in both directions. In addition, the Northern Terminal siting area is fragmented by several existing pipeline ROWs, SH-71 to the west, and a Union Pacific rail line to the north. Other notable sources of disturbance near the Northern Terminal siting area include the Sinclair Refinery located approximately 3 miles to the northeast and the Wyoming State Penitentiary located approximately 3.4 miles to the west.

Construction Impacts

Construction of the Northern Terminal would result in the disturbance of 502 acres of potential wildlife habitat during construction. Approximately 261 acres of temporary use areas would be reclaimed following construction and 241 acres of habitat would remain disturbed during long-term operation of the facility. These areas of impact represent <0.01 percent of habitat within the Region I wildlife analysis area. The remaining areas of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

Impacts to wildlife species from surface disturbance would include the loss and fragmentation of habitat. Habitat loss or alteration would result in direct losses of smaller, less mobile wildlife species, such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats.

Big Game Species

Potential direct impacts to big game species (i.e., mule deer and pronghorn) would include the incremental reduction of potential forage and the incremental increase of noxious and invasive weeds and habitat fragmentation caused by vegetation removal. These impacts would be more pronounced within mule deer and pronghorn crucial winter range. Construction of the Northern Terminal would result in the construction disturbance of 389 acres and operation disturbance of 187 acres of mule deer

crucial/yearlong winter range. These areas of impact represent 0.13 percent and 0.06 percent, respectively, of the total existing crucial/yearlong winter range for mule deer within the Region I big game analysis area. These habitats consist primarily of saltbush shrubland and sagebrush shrubland. Impacts to crucial winter range would include the loss of potential cover and forage, consisting primarily of woody/shrubby vegetation such as sagebrush, bitterbrush, and winterfat. Loss of available forage (e.g., woody shrubs, such as sagebrush) would result in a long-term (greater than 25 years) impact to wintering big game species. The application of the BLM Rawlins FO RMP's (BLM 2008) seasonal restriction to prevent construction activities on public lands within crucial winter range between November 15 and April 30 would reduce displacement of mule deer during the winter months. However, this protection measure does not limit surface disturbance, and impacts to habitat (i.e., crucial winter range) would still occur. No pronghorn crucial winter range would be disturbed by construction of the Northern Terminal. Impacts to elk and mountain lions at the Northern Terminal are not expected since these species are known to occur at low densities in this area.

Small Game Species

Construction of the Northern Terminal would result in direct impacts to small game species (e.g., greater sage-grouse, mourning dove, desert cottontail, white-tailed jackrabbit, and furbearers) and would include construction- and operation-related disturbance of approximately 502 and 241 acres, respectively. These areas of impact represent 0.01 percent and <0.01 percent of small game habitat, respectively, within the Region I wildlife analysis area. The greater sage-grouse is classified as a federal candidate species as well as a BLM, USFS, and state sensitive species. Therefore, this species is discussed further in Section 3.8, Special Status Wildlife Species.

Impacts from construction of the Northern Terminal also would include animal displacement from disturbed areas and increased habitat fragmentation until reclamation has been completed and vegetation is re-established. In most instances, suitable habitat adjacent to disturbed areas would be available for use by these species. However, displacement would increase competition and could result in local reductions in wildlife populations, if adjacent habitats are at carrying capacity. Potential impacts also could include nest and burrow abandonment or loss of eggs or young. These temporary losses would reduce productivity for that breeding season, given the duration of construction activities in the terminal area. Construction of the Northern Terminal also would result in the construction disturbance of 7 acres and operation disturbance of 3 acres of waterfowl habitat. These areas represent 0.01 percent and <0.01 percent, respectively, of the available waterfowl habitat within the wildlife analysis area.

Several factors would minimize potential impacts to big game and small game species as a result of the construction of the Northern Terminal. The Northern Terminal is located in an area that already has a high level of human presence and noise (e.g., I-80, Town of Sinclair). Impacts to game species and habitats at the Northern Terminal siting area would be minimized with implementation of the following design features and proposed mitigation measures.

- Applicable design features: TWE-29, TWE-30, and TWE-32; and
- Applicable mitigation measures: **WLF-3**, **WLF-6, WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to game species would be limited to habitat loss and fragmentation, potential mortality from vehicle collisions, and disturbance during maintenance activities.

Nongame Species

The types of impacts to nongame species (e.g., small mammals, passerines, raptors, and reptiles) would be similar to those previously discussed for small game species. Construction of the Northern Terminal

would result in the construction disturbance of 502 acres and operation disturbance of 241 acres of potential nongame habitat. These areas represent 0.01 percent and <0.01 percent of potential nongame habitat within the Region I wildlife analysis area.

Several factors would minimize potential impacts to nongame species as a result of the construction of the Northern Terminal. The Northern Terminal is located in an area that already has a high level of human presence and noise (e.g., I-80, Town of Sinclair). Impacts to nongame species and habitats at the Northern Terminal siting area would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-30, TWE-32, TWE-33, and TWE-34; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-6**, **WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to nongame species would be limited to habitat loss and fragmentation, mortality from vehicle collisions, and disturbance during maintenance activities.

Operation Impacts

Acres of operation disturbance are presented in the big game species, small game species, and nongame species discussions above. Impacts from operations to these taxa groups are similar to those presented in the construction impacts discussion; however, they are less intensive and longer in duration. As discussed above, the Applicant's commitment to using raptor-safe designs (TWE-30) will avoid or minimize potential for electrocution-related impacts to wildlife at the Northern Terminal. Information regarding proposed Northern Terminal components is described in Section 2.4.3.1.

Southern Terminal and Southern Terminal Alternate Siting Area

Habitat Disturbance and Fragmentation

The existing conditions at the Southern Terminal and Southern Terminal Alternate siting area relative to wildlife habitat can be characterized as moderately disturbed and fragmented. The majority of human disturbance near the siting area results from US-95 located approximately 3.5 miles to the east. This highway is a major source of fragmentation in the local area. An existing electrical substation, located approximately 0.5 mile to the southwest and the Solar One energy plant, located approximately 1.5 miles to the southeast of the siting area, contribute to existing disturbance and fragmentation adjacent to the siting area. Several existing large transmission lines are located adjacent to the Southern Terminal siting area resulting in further fragmentation of the local landscape.

Construction Impacts

Construction of the Southern Terminal and the Southern Terminal Alternate would mostly occur in developed/disturbed areas that are not considered to be suitable wildlife habitat. Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant wildlife species utilize these areas. Eleven percent of the siting area is desert shrubland. Consequently, species associated with this habitat type in the region (e.g., mourning dove, greater roadrunner, desert horned lizard, and desert woodrat) potentially could be impacted. The Southern Terminal Alternate would potentially impact more desert shrubland habitat than the Southern Terminal, but no substantive impacts to wildlife resources as a result of construction of the Southern Terminal or the Southern Terminal Alternate would be anticipated.

Construction of the Southern Terminal would result in impacts to 63 acres of desert shrubland habitat. Approximately 38 acres of temporary use areas would be reclaimed following construction and 25 acres

of habitat would remain disturbed during long-term operation of the facility. These areas of impact represent 0.01 percent of desert shrubland habitat within the Region IV wildlife analysis area. The remaining area of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

Construction of the Southern Terminal Alternate would result in impacts to 85 acres of desert shrubland habitat. Approximately 56 acres of temporary use areas would be reclaimed following construction and 29 acres of habitat would remain disturbed during long-term operation of the facility. These areas of impact represent 0.01 percent of desert shrubland habitat within the Region IV wildlife analysis area. The remaining area of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

Impacts to wildlife species from surface disturbance would include the loss and fragmentation of habitat. Habitat loss or alteration would result in direct losses of smaller, less mobile wildlife species such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats.

Big Game Species

Potential direct impacts to the desert bighorn sheep would include the incremental reduction of potential forage and the incremental increase of noxious and invasive weeds and habitat fragmentation from vegetation removal. The primary potential indirect impact would be wildlife avoidance (displacement) of otherwise suitable habitat in the vicinity of Project disturbance areas due to noise and human activity. Impacts due to disturbance also may include both short-term and permanent changes to big game migration corridors during periods of construction and operation activity. Impacts would be more pronounced within desert bighorn sheep occupied habitat.

Construction and operation of the Southern Terminal would result in the disturbance of 3 acres and 1 acre, respectively, of desert bighorn sheep yearlong range. These areas of impact represent <0.01 percent and <0.01 percent, respectively, of the total existing yearlong range for desert bighorn sheep within the Region IV big game analysis area. These habitats consist primarily of desert shrubland and developed/disturbed areas. No big game crucial winter range would be disturbed by construction of the Southern Terminal.

Construction and operation of the Southern Terminal Alternate would result in the disturbance of 4 acres and 1 acre, respectively, of desert bighorn sheep yearlong range. These areas of impact represent <0.01 percent and <0.01 percent, respectively, of the total existing yearlong range for desert bighorn sheep within the Region IV big game analysis area. These habitats consist primarily of desert shrubland and developed/disturbed areas. No big game crucial winter range would be disturbed by construction of the Southern Terminal Alternate.

Small Game Species

Construction of the Southern Terminal and Southern Terminal Alternate would result in direct impacts to small game species (e.g., mourning dove, desert cottontail, and chukar). Construction and operation of the Southern Terminal would result in the disturbance of 63 acres and 25 acres, respectively, of potential small game habitat. These areas of impact represent 0.01 percent and <0.01 percent, respectively, of the total existing small game habitat within the Region IV wildlife analysis area. Construction and operation of the Southern Terminal Alternate would result in the disturbance of 85 acres and 29 acres, respectively, of small game habitat. These areas of impact represent 0.01 percent and <0.01 percent, respectively, of the total existing small game habitat within the Region IV wildlife analysis area.

Impacts from construction of the Southern Terminal or Southern Terminal Alternate also would include wildlife displacement from disturbed areas and increased habitat fragmentation until reclamation has been completed and vegetation is re-established. In most instances, suitable habitat adjacent to disturbed areas would be available for use by affected species. However, displacement would increase competition and could result in local reductions in wildlife populations, if adjacent habitats are at carrying

capacity. Potential impacts also could include nest abandonment or loss of eggs or young. These temporary losses would reduce productivity for that breeding season, given the duration of construction activities in the terminal area. No construction or operation impacts to waterfowl from the construction of the Southern Terminal or Southern Terminal Alternate are expected.

Several factors would minimize potential impacts to game species as a result of the construction of the Southern Terminal or Southern Terminal Alternate. These terminals would be located in an area that already has a moderate level of human presence and noise (e.g., US-95, existing substations, Solar One energy plant). Therefore, direct impacts from construction of the proposed Project at the Southern Terminal and Southern Terminal Alternate would be limited primarily to habitat loss and fragmentation. Impacts to nongame species and habitats at the Southern Terminal and Southern Terminal Alternate would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29 and TWE-32; and
- Applicable mitigation measures: **WLF-3**, **WLF-6**, **WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to game species would be limited to habitat loss, fragmentation, mortality from vehicle collisions, and disturbance during maintenance activities.

Nongame Species

The types of impacts to nongame species (e.g., small mammals, passerines, raptors, and reptiles) would be similar to those previously discussed for small game species. Construction and operation of the Southern Terminal would result in the disturbance of 63 acres and 25 acres, respectively, of nongame wildlife habitat. These areas of impact represent 0.01 percent and <0.01 percent, respectively, of the total existing nongame wildlife habitat within the Region IV wildlife analysis area. Construction and operation of the Southern Terminal Alternate would result in the disturbance of 85 acres and 29 acres, respectively, of nongame wildlife habitat. These areas of impact represent 0.01 percent and <0.01 percent, respectively, of the total existing nongame wildlife habitat within the Region IV wildlife analysis area.

These terminals would be located primarily in developed/disturbed areas that are not considered to be suitable wildlife habitat. Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant wildlife species utilize these areas. Remaining impacts to nongame species within the Southern Terminal and Southern Terminal Alternate siting areas would be limited primarily to habitat loss and fragmentation. Impacts to nongame species and habitats at the Southern Terminal and Southern Terminal Alternate would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-30, TWE-32, TWE-33, and TWE-34; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-8**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to nongame species would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Operation Impacts

Operation of the Southern Terminal or the Southern Terminal Alternate would primarily occur in developed/disturbed areas that are not considered to be suitable wildlife habitat. Although the developed/disturbed land cover type is not considered to be suitable wildlife habitat and is not included in analyses or reported disturbance acreages, some wildlife disturbance-tolerant species utilize these areas. Eleven percent of the siting area is desert shrubland. Consequently, species associated with this habitat type in the region (e.g., desert horned lizard, desert woodrat) potentially could be impacted. The Southern Terminal Alternate would potentially impact more desert shrubland habitat than the Southern Terminal but no substantive impacts to wildlife resources resulting from operation of the Southern Terminal or the Southern Terminal Alternate are expected. Electrocution-related impacts to wildlife at the Southern Terminal and Southern Terminal Alternate would be avoided or minimized through the TransWest's commitment to use APLIC (2006) raptor-safe design features per TWE-30.

Southern Terminal located near IPP (Design Option 2)

Construction Impacts

Construction of the Southern Terminal located near IPP (Design Option 2) would mostly occur in the grassland, greasewood flat, and saltbush shrubland vegetation communities. Approximately 51 percent of the siting area is greasewood flat and 44 percent is saltbush shrubland. Consequently, species associated with these habitat types in the Project region (e.g., western meadowlark, American badger, white-tailed jackrabbit, gopher snake) could be impacted.

Operation Impacts

Operation of the Southern Terminal located near IPP (Design Option 2) would mostly occur in the grassland, greasewood flat, and saltbush shrubland vegetation communities. Approximately 44 percent of the siting area is within saltbush shrubland. Consequently, species associated with these habitat types in the Project region (e.g., American badger, white-tailed jackrabbit, gopher snake) potentially could be impacted.

Substation located near IPP (Design Option 3)

Construction Impacts

The Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2). Construction impacts to wildlife species would be anticipated to be similar to those resulting from construction of the Southern Terminal.

Operation Impacts

The Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2). Operation impacts to wildlife species would be similar to those resulting from operation of the Southern Terminal.

Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub

Because the implementation of Design Option 2 would utilize the same alternative routes and construction techniques as the proposed Project, impacts to wildlife from construction and operation of Design Option 2 would be similar to those discussed under the alternative routes. Differences between Design Option 2 and the proposed Project include the locations of the Southern Terminal and ground electrode system, as well as the addition of a series compensation station midway between IPP and Marketplace. The Southern Terminal would be located near IPP in Utah instead of near Marketplace in Nevada and the ground electrode system would be within 50 miles of IPP. Impacts to vegetation from construction and operation of a converter station near IPP, ground electrode system, and series compensation station can be related to wildlife and are discussed in Section 3.5.6.7.

Table 3.7-13 provides a summary of potential impacts associated with Design Option 2. Impacts from Design Option 2 facilities would be similar to impacts described in Section 3.7.6.1, Impacts to Wildlife Species from Terminal Construction and Operation and Section 3.7.6.2, Impacts to Wildlife Common to all Alternative Routes and Associated Components. The same design features, BMPs, and mitigation measures described for the Northern Terminal would be implemented to minimize impacts resulting from Design Option 2. Impacts to each wildlife habitat type would be less than 1 percent of the total of each vegetation community in the wildlife analysis area.

Table 3.7-13 Summary of Design Option 2 Facility Siting Area Impact Parameters for Wildlife Species

Design Option 2 DC/AC Converter/Substation
• 5 miles of 34.5-kV interconnection lines.[1]
• Approximately 80 acres of construction disturbance, 47 acres of operation disturbance, and 639 acres of indirect impacts to pronghorn crucial yearlong range would occur.
• Approximately 156 acres of construction impacts and 93 acres of operation impacts to small game and nongame potential habitat would occur.
• Approximately 1 acre of construction impacts and <1 acre of operation impacts to potential waterfowl habitat would occur.

[1] Length refers to length of 34.5-kV interconnection lines and lines serves as a proxy metric for avian collision potential.

Design Option 3 – Phased Build Out

Implementation of Design Option 3 would utilize the same alternative routes, facilities, and construction techniques as the proposed Project, in a phased approach. Impacts to wildlife from construction and operation of Design Option 3 would be the same as those discussed under the alternative routes.

Table 3.7-14 provides a summary of potential impacts associated with Design Option 3.

Table 3.7-14 Summary of Design Option 3 Substation Impact Parameters for Wildlife Species

Design Option 3 Substation
• 56 miles of 34.5-kV interconnection lines.[1]
• Approximately 71 acres of construction, 38 acres of operation, and 639 acres of indirect impacts to pronghorn crucial yearlong range would occur.
• Approximately 138 acres of construction and 75 acres of operation impacts to small game and nongame potential habitat would occur.
• Approximately <1 acre of construction and <1 acre of operation impacts to waterfowl potential habitat would occur.

[1] Length refers to length of 34.5-kV interconnection lines and lines serves as a proxy metric for avian collision potential.

Operational impacts to wildlife species and their habitats at the terminal areas and Design Options 2 and 3 would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-30, TWE-32, TWE-33, and TWE-34; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-6**, **WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to wildlife species would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities. There would be negligible potential for electrocution due to a lack of prey habitat.

Decommissioning Impacts

Impacts to wildlife during decommissioning of the Northern Terminal, Southern Terminal, Southern Terminal Alternate, Southern Terminal located near IPP (Design Option 2), or the Southern Substation located near IPP (Design Option 3) would be similar to, but substantially less intensive than, construction impacts.

3.7.6.2 Impacts Common to All Alternative Transmission Line Routes and Associated Components

Potential impacts to wildlife species from the alternative transmission line routes can be grouped into two main categories, construction and operation. Construction–related impacts are primarily those associated with habitat loss, conversion, degradation, and fragmentation; and the potential for direct wildlife mortalities resulting from vehicle and facility collisions and crushing of nests/burrows. Construction impacts account for all disturbances caused during construction of the proposed Project, including vegetation treatment and removal, increased human activity, and increased noise levels. Operation impacts are defined as those impacts that remain after reclamation of temporary construction use facilities is complete. Operation-related impacts will last at least as long as the Project is in operation and maintenance activities are conducted (estimated at 50 years). Construction–related impacts are typically short–term, whereas operation impacts are typically long–term. Examples of potential operation-related impacts include habitat disturbance resulting from periodic vegetation management activities; application of herbicides; increased risk of wildland fire; wildlife mortalities that occur as a result of maintenance activities; increased predation of local prey populations by perching raptors; habitat degradation resulting from increased noise and human activity along the Project disturbance areas; and habitat fragmentation.

Construction and operation of transmission lines and associated access roads (e.g., two–tracks, mowed or cleared access ways) would increase the availability of travel corridors for terrestrial mammalian predators (Gelbard and Belknap 2003; Science Applications International Corporation [SAIC] 2001). During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until after the end of Project life (decommissioning). Timeframes for successful reclamation can vary dependent on multiple factors including soil types and conditions, climate (e.g., drought persistence), noxious weed invasions, and effective monitoring and adaptive management in problem areas. Mitigation measure **VG-1** (**Table C.5-1**) would require TransWest to develop site-specific reclamation strategies and seed mixes in areas of soils determined by the BLM or appropriate land management agency to have soils with low reclamation potential. Reclaimed areas would be monitored annually by the applicant to ensure successful reclamation is occurring. The length of time for the annual monitoring and the definition of successful reclamation would be determined by the appropriate land management agency. Subsequent actions in areas without successful reclamation would be determined in consultation with the appropriate land management agency.

Impacts to habitat can be further categorized as direct and indirect. Direct impacts to habitat result when habitat is destroyed or converted to a form that is unsuitable for the native species known or with potential to occur there. The primary potential indirect impact to habitat is wildlife avoidance (displacement) of otherwise suitable habitat in and around the Project disturbance areas during construction and operation.

The primary impacts associated with operation of transmission lines and associated facilities are wildlife mortalities as a consequence of electrocution or collision with Project components. Electrocution is primarily associated with smaller (i.e., 60-kV or less) power lines, due to the size of towers and closer spacing of the wires (APLIC 2006). For the proposed Project, the ±600-kV conductors would be separated by 40 to 50 feet, thereby posing no threat of electrocution to wildlife. The portions of the low-voltage electrode lines that would connect the AC/DC converter stations with the ground electrode beds would have some potential to cause avian electrocutions where they are not co-located with the ±600-kV DC transmission line. These portions of the electrode lines would be located on single pole structures

similar to those used for a modified 34.5-kV distribution line. Because these lines would only be used at high currents for, on average, 30 hours per year and because the two conductors would be separated by approximately 6 feet (5 feet is the APLIC [2006]-recommended separation distance for protection of eagles), the probability of the electrode lines causing any avian or other wildlife electrocutions would be very low.

The potential for collision impacts is influenced by species characteristics and environmental factors. The manner in which birds utilize habitats near transmission lines affects the probability of collisions (APLIC 2012). Collision risk is greater for birds that make regular and repeated flights between nesting, foraging, and roosting areas in proximity to transmission lines (APLIC 2012). Other potential impacts include avoidance of otherwise suitable habitat due to the presence of a transmission line and the increased noise and human presence that are the result of maintenance activities. Increased predation by corvids and other predatory and scavenging species, which tend to accompany human presence, also may increase.

Construction Impacts

Construction of the proposed Project would result in the alteration, degradation, fragmentation, and loss of wildlife habitat, of which a percentage would be immediately reclaimed following construction of the facilities. The remaining disturbance area would be reclaimed at the end of the life of the Project (estimated at 50 years). Recovery times of the various vegetation communities that provide habitat for species within the wildlife analysis area are discussed in Section 3.5, Vegetation.

Habitat loss or alteration from surface disturbance would result in direct losses of smaller, less mobile species of wildlife, such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats. Surface disturbance also would result in an increase in habitat fragmentation along the proposed Project until reclamation has been completed and vegetation is re-established.

The road network, which would be constructed or upgraded to fulfill the construction requirements of the proposed Project, may impact wildlife species to varying degrees depending on the geographic location, type of habitat disturbed, and wildlife species potentially impacted. There are seven general impacts to wildlife habitat associated with roads including: 1) increased mortality from road construction; 2) increased mortality from collisions with vehicles; 3) modification of wildlife behavior; 4) alteration of the physical environment; 5) alteration of the chemical environment; 6) spread of invasive and exotic species; and 7) increased alteration and use of habitats by humans (Trombulak and Frissell 2000). Not all species and ecosystems are equally impacted by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian habitats (Trombulak and Frissell 2000).

Game Species

Potential direct impacts to big game species (e.g., pronghorn, mule deer, elk, moose, Rocky Mountain bighorn sheep, and desert bighorn sheep) would include the incremental loss of potential forage and the increase of habitat fragmentation from vegetation removal associated with surface disturbance. The primary potential indirect impact would be wildlife avoidance (displacement) of otherwise suitable habitat in the vicinity of Project disturbance areas due to increased noise and human activity. Impacts due to disturbance also may include both short-term and permanent changes to big game migration corridors during periods of both construction and operation activity. Impacts would be more pronounced within big game crucial winter range, fawning/calving areas, migration corridors, elk foraging areas, and desert bighorn sheep occupied habitat. Impacts to crucial winter range would include the loss of potential cover and forage consisting primarily of woody/shrubby vegetation such as sagebrush, bitterbrush, and winterfat. Loss of available forage (e.g., woody shrubs, such as sagebrush) would result in a long-term (greater than 25 years) impact to wintering big game species.

Construction of the proposed Project would result in direct impacts to small game species (i.e., upland game birds, small game mammals, furbearers, and waterfowl) and would include the loss of potentially suitable habitat. Small game species such as the Columbian sharp-tailed grouse, greater sage-grouse, and pygmy rabbit have designated protections (e.g., BLM sensitive, USFS sensitive, state sensitive, etc.) and are discussed further in Section 3.8, Special Status Wildlife Species. Impacts from the construction of the alternative routes also would include animal displacement from the disturbance areas and increased habitat fragmentation, until reclamation has been completed and vegetation is re-established. Potential impacts also could include nest and burrow abandonment or loss of eggs or young. These losses could reduce productivity for that breeding season, depending on timing and duration of construction activities in a specific area. Indirect impacts associated with human activity and noise have been demonstrated to impact small game populations negatively, especially upland game birds. These species may experience increased mortality rates due to increased access as a result of new and improved roads (Holbrook and Vaughan 1985). Vehicular traffic may injure or kill individuals and local populations may experience higher levels of hunting and poaching pressure, due to improved human and vehicle access (Holbrook and Vaughan 1985). In most instances, suitable habitat adjacent to disturbance areas would be available for use by small game species.

Impacts to game species and habitats would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-32, and TWE-33; and
- Applicable mitigation measures: **WLF-3**, **WLF-6, WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. Proposed mitigation measures and effectiveness are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to game species would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities. Therefore, impacts from construction of the Project would be limited primarily to habitat loss and fragmentation.

Nongame Species

The types of impacts to nongame species (e.g., small mammals, reptiles) would be similar to those discussed for small game species. Nongame species such as the Wyoming pocket gopher and desert iguana have designated protections (e.g., BLM sensitive, USFS sensitive, state sensitive, etc.) and are discussed further in Section 3.8, Special Status Wildlife Species. Migratory birds and associated habitats are discussed in Section 3.22, Migratory Birds.

Impacts to nongame species and habitats would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-30, TWE-32, TWE-33, and TWE-34; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-6**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to nongame species would be limited to habitat loss, fragmentation, potential mortality from collisions, and disturbance during maintenance activities.

Operation Impacts

Game Species

Operation-related impacts to big game and small game species would result primarily from vegetation management and other maintenance activities, including reconnaissance flights and increased vehicle activity for transmission line inspection. Depending on species sensitivity, some species may experience disruption or additional stress due to overhead flights. Vegetation maintenance would have impacts similar to those described above for construction activities. Noise and human activity impacts are discussed below. Small game species would have potential for increased risk of predation by raptor and corvid species, which may perch on transmission lines and towers.

Nongame Species

Potential impacts to nongame species are similar to those discussed above for game species.

Indirect Impacts

Analysis of Wildlife Impacts as a Result of Human Activity and Noise

Indirect impacts from construction and operation of the proposed Project would result from increased human activity and noise in the vicinity of the terminal locations, access roads, and the 250-foot-wide transmission line ROW. Increased activity and noise levels result from other activities such as public vehicle use and other recreational activities. The most common wildlife responses to noise and human activity are avoidance or accommodation. Avoidance would result in displacement of animals from an area larger than the actual disturbance area. Following avoidance of human activity and noise-producing areas during construction, certain wildlife species may acclimate to the activity and begin to return to areas that were formerly avoided. For example, during construction, it is likely that big game species (i.e., pronghorn, mule deer) would be displaced from a larger area than the actual disturbance sites due to the avoidance response. Displacement of big game species as a result of direct habitat loss and indirect reduction in habitat quality has been widely documented (Irwin and Peek 1983; Lyon 1983, 1979; Rost and Bailey 1979). Studies have demonstrated that big game species tend to move away from areas of human activity and roads, thereby reducing habitat utilization near disturbance areas (Cole et al. 1997; Sawyer et al. 2006). Persistent road induced disturbance may lead to permanent shifts in habitat use by elk away from roads (Rowland et al 2000). However, big game species have demonstrated the ability to acclimate to a variety of activities as long as human harassment levels do not increase substantially (Forman et al. 2003). Therefore, it is possible that the extent of displacement would approximate the actual disturbance area after the first few years of operation (Forman et al. 2003). Mule deer and pronghorn appear to be more tolerant of human activity than elk and desert bighorn sheep. For mule deer, displacement distances from new roads ranged from 330 feet to 0.6 mile, depending on the presence of vegetative cover (Rost and Bailey 1979). However, disturbance associated with construction activities would occur over a relatively short period and it is assumed that big game species would return to the area following completion of Project construction. In addition to an avoidance response, increased human activity intensifies the potential for wildlife/human interactions ranging from harassment of big game species to legal harvest or poaching.

For the purposes of this analysis, the total extent of indirect habitat loss as a result of the wildlife avoidance response is estimated to be the same as the construction noise attenuation distance so that it could be applied to all wildlife species. The analysis conservatively assumes habitat to be flat terrain with no atmospheric conditions or other potential dampening effects, so that construction noise would dissipate to ambient noise levels at a distance of approximately 6,400 feet (1.2 miles). Because many areas along the Project and its alternatives are characterized by topographic variation and woody vegetation (e.g., shrubland, woodland, forest), this approach likely overestimates potential noise impacts. Using this distance from the 250-foot-wide transmission line ROW and considering the potential for access road development, this analysis reports all acreages of habitat potentially indirectly impacted by

noise and human activity. While actual locations of access roads are not yet known, this methodology accounts for areas with increased potential for being indirectly impacted by noise and human activity. It also counterbalances those acreages more distant from the 250-foot-wide transmission line ROW where the access roads would tie into existing roads. These impacts would occur most intensely in time and space during Project construction but would be expected to continue at lower levels of intensity for the operational life of the Project (estimated at 50 years). Subsequent impact summary tables for each of the Project regions present these acreages of indirect impacts.

Proposed mitigation measures and design features would minimize the potential impacts related to human activity and noise during construction of the Project. TransWest would implement a mandatory employee biological education program for all construction personnel working on the Project (TWE-33). This would consist of all personnel involved in construction activities being notified of known occurrence of protected species or habitat in the construction area. Sensitive areas would be considered avoidance areas. Prior to any construction activity, avoidance areas would be marked on the ground and maintained through the duration of the contract. TransWest's design feature to implement seasonal timing restrictions in certain areas (TWE-32) would help avoid impacts to wildlife during sensitive periods (e.g., nesting and breeding periods). Proposed mitigation measures, design features, and effectiveness are presented in Section 3.7.6, Impacts to Wildlife Species.

Decommissioning Impacts

The types of impacts to wildlife during decommissioning of the Project would be similar to, but substantially less intensive than, construction impacts.

3.7.6.3 Region I

Table 3.7-15 provides a tabulation of impacts associated with the alternative routes in Region I. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Alternative I-A (Applicant Proposed)

Habitat Disturbance and Fragmentation

Alternative I-A would traverse approximately 156 miles of wildlife habitat in Wyoming and Colorado. Approximately 49 miles (31 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-16**. Existing conditions within the Alternative I-A potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Alternative I-A would follow the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it would turn south towards the Wyoming-Colorado border. This section of Alternative I-A is highly fragmented and disturbed by the interstate highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-A are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 471 miles of existing roads are located within the Alternative I-A potential disturbance areas as presented in **Table 3.7-16**. This represents the second highest existing road density within the potential disturbance areas among Region I alternatives.

Table 3.7-15 Summary of Region I Alternative Route Impact Parameters for Wildlife Species

Parameter	Alternative I-A			Alternative I-B			Alternative I-C			Alternative I-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species												
Colorado pronghorn crucial winter range (acres)	229	54	24,738	229	54	24,738	547	117	49,873	229	54	24,738
Percentage of existing habitat within the Region I big game analysis area	0.08	0.02	8.34	0.08	0.02	8.34	0.18	0.04	16.82	0.08	0.02	8.34
Wyoming pronghorn crucial winter/yearlong range (acres)	129	28	15,437	176	36	20,464	363	90	49,903	294	59	30,505
Percentage of existing habitat within the Region I big game analysis area	0.04	0.01	4.53	0.05	0.01	6.01	0.11	0.03	14.65	0.09	0.02	8.95
Colorado mule deer crucial winter range (acres)	317	81	35,482	317	81	35,482	883	190	79,017	317	81	35,482
Percentage of existing habitat within the Region I big game analysis area	0.04	0.01	4.94	0.04	0.01	4.94	0.12	0.03	11.00	0.04	0.01	4.94
Wyoming mule deer crucial winter range (acres)	–	–	–	–	–	–	15	6	4,849	–	–	16
Percentage of existing habitat within the Region I big game analysis area	–	–	–	–	–	–	0.31	0.12	99.63	–	–	0.33
Wyoming mule deer crucial winter/yearlong range (acres)	97	22	12,046	133	28	15,720	317	75	37,794	202	42	23,269
Percentage of existing habitat within the Region I big game analysis area	0.03	0.01	4.15	0.05	0.01	5.42	0.11	0.03	13.03	0.07	0.01	8.02
Colorado elk crucial winter range (acres)	345	83	37,103	345	83	37,103	1,491	324	136,388	345	83	37,103
Percentage of existing habitat within the Region I big game analysis area	0.03	0.01	3.62	0.03	0.01	3.62	0.15	0.03	13.29	0.03	0.01	3.62
Colorado elk parturition range	150	43	15,842	150	43	15,842	–	–	–	150	43	15,842
Percentage of existing habitat within the Region I big game analysis area	0.05	0.01	5.09	0.05	0.01	5.09	–	–	–	0.05	0.01	5.09
Wyoming elk crucial winter/yearlong range (acres)	31	6	4,440	29	6	4,048	7	2	1,063	29	6	4,048
Percentage of existing habitat within the Region I big game analysis area	0.02	<0.01	3.13	0.02	<0.01	2.85	<0.01	<0.01	0.75	0.02	<0.01	2.85

Table 3.7-15 Summary of Region I Alternative Route Impact Parameters for Wildlife Species

Parameter	Alternative I-A			Alternative I-B			Alternative I-C			Alternative I-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Small Game and Nongame Species												
Upland game bird, small game mammal, furbearer, small nongame mammal, and reptile habitat (acres)[1]	2,029	451	219,187	2,056	461	229,000	2,407	535	257,586	2,157	468	235,037
Percentage of existing habitat within the Region I wildlife analysis area	0.04	0.01	4.34	0.04	0.01	4.54	0.05	0.01	5.10	0.04	0.01	4.66
Waterfowl habitat (acres)[2]	39	8	4,021	40	8	4,083	34	8	5,383	47	9	4,981
Percentage of existing waterfowl habitat within the Region I wildlife analysis area	0.05	0.01	4.90	0.05	0.01	4.98	0.04	0.01	6.56	0.06	0.01	6.07
Relative Collision Potential for Waterfowl												
Length of transmission line (miles)[3]	155			158			186			168		

[1] Vegetation communities used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities used to calculate acreages of waterfowl habitat disturbance include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Table 3.7-16 Summary of Existing Conditions by Alternative within Region I

Alternative	Total Length (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Existing Roads within Region I Disturbance Areas	Miles of Roads within Region I Disturbance Areas/Miles of Alternative
I-A	156	106	49	471	3.04
I-B	158	108	49	482	3.05
I-C	186	94	92	503	2.70
I-D	168	119	49	504	3.00

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Key Parameters SummaryGame Species

Alternative I-A would result in direct disturbance to pronghorn, mule deer, and elk crucial winter ranges (**Table 3.7-15**). Implementation of the BLM, CPW, and WGFD restriction to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30 would prevent direct impacts to wintering big game species. Alternative I-A would result in the construction and operation disturbance of 2,029 acres and 451 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 and 0.01 percent of the available upland game bird, small game mammal and furbearer habitat within the Region I wildlife analysis area. Alternative I-A also would result in the construction disturbance of 39 acres and operation disturbance of 8 acres of waterfowl habitat. These areas represent 0.05 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area.

Nongame Species

Impacts under Alternative I-A would occur as the result of the construction disturbance of 2,029 acres and operation disturbance of 451 acres of small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area.

Impacts to wildlife species and their habitats along Alternative I-A would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-29, TWE-30, TWE-32, TWE-33, and TWE-34; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-5**, **WLF-6**, **WLF-7**, **WLF-8**, and **SSWS-5**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.7.6, Impacts to Wildlife Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative I-B (Agency Preferred)

Habitat Disturbance and Fragmentation

Alternative I-B would traverse approximately 158 miles of wildlife habitat in Wyoming and Colorado. Approximately 49 miles (31 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-16**. Existing conditions within the Alternative I-B potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented.

Alternative I-B would follow the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it would turn south towards the Wyoming-Colorado border. This section of Alternative I-B is highly fragmented and disturbed by the interstate highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-B are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 482 miles of existing roads are located within the Alternative I-B potential disturbance areas as presented in **Table 3.7-16**. This represents the highest existing road density within the disturbance areas among Region I alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative I-B generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-B would result in the construction and operation disturbance to 2,056 acres and 461 acres, respectively, of potentially suitable upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-B also would result in the construction disturbance of 40 acres and operation disturbance of 8 acres of waterfowl habitat. These areas represent 0.05 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative I-B generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-B would result in the construction and operation disturbance of 2,056 acres and 461 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative I-C

Habitat Disturbance and Fragmentation

Alternative I-C would traverse approximately 186 miles of wildlife habitat in Wyoming and Colorado. Approximately 92 miles (50 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-16**. Existing conditions within the Alternative I-C disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Alternative I-C would follow the I-80 corridor for approximately 32 miles from Rawlins, Wyoming, to just south of Creston Junction, Wyoming, at which point it would turn south following the SH-798 corridor towards the Wyoming-Colorado border. This section of Alternative I-C is highly fragmented and disturbed by the interstate highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-C are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 503 miles of existing roads are located within the Alternative I-C potential disturbance areas as presented in **Table 3.7-16**. This represents the lowest existing road density within the disturbance areas among Region I alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative I-C generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-C would result in the construction and operation disturbance of 2,407 acres and 535 acres, respectively, of potentially suitable upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-C also would result in the construction disturbance of 34 acres and operation disturbance of 8 acres of waterfowl habitat. These areas represent 0.04 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative I-C generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-C would result in the construction and operation disturbance of 2,407 acres and 535 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and 0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative I-D

Habitat Disturbance and Fragmentation

Alternative I-D would traverse approximately 168 miles of wildlife habitat in Wyoming and Colorado. Approximately 49 miles (29 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-16**. Existing conditions within the Alternative I-D potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Alternative I-D would follow the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it would turn south towards the Wyoming-Colorado border. This section of Alternative I-D is highly fragmented and disturbed by the interstate highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-D are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 504 miles of existing roads are located within the Alternative I-D potential disturbance areas as presented in **Table 3.7-16**. This represents the third highest existing road density within the disturbance areas among Region I alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative I-D generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-D would result in the construction and operation disturbance of 2,157 acres and 468 acres, respectively, of potentially suitable upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-D also would result in the

construction disturbance of 47 acres and operation disturbance of 9 acres of waterfowl habitat. These areas represent 0.06 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative I-D generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-15** presents a comparison of impacts to habitat in Region I. Alternative I-D would result in the construction and operation disturbance of 2,157 acres and 468 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Tuttle Ranch Micro-siting Options

TransWest has developed two potential options to avoid or minimize the crossing of the Tuttle Ranch along Alternative I-D by routing the alternative across the NPS Deerlodge Road. These are referred to as Tuttle Ranch Micro-siting Options 3 and 4. CPW holds a conservation easement over portions of the Tuttle Ranch, located east of the Town of Elk Springs in Moffat County, Colorado. The Tuttle Ranch supports an important white-tailed prairie dog colony, which is suitable habitat for the black-footed ferret. It is intended that future black-footed ferret reintroductions will occur within this conservation easement. Micro-siting Options 3 and 4 would avoid impacts to active white-tailed prairie dog colonies.

Compared to Alternative I-D, impacts to other local wildlife populations resulting from these micro-siting options are anticipated to be minor in terms of the number of acres of habitat directly impacted. Section 3.7.6.2 describes impacts common to all alternatives. The substantive difference between the micro-siting options and Alternative I-D involves the level of habitat fragmentation resulting from construction and other long-term impact factors. The NPS is responsible for protection of wildlife resources on NPS-managed lands (NPS 2006). Micro-siting Options 3 and 4 would avoid crossing the conservation easement, but would result in increased long-term habitat fragmentation within the NPS Deerlodge Road area where no overhead transmission lines currently exist.

Alternative Connectors in Region I

No alternative connectors are proposed in Region I.

Alternative Ground Electrode Systems in Region I

The northern ground electrode system would be necessary within 100 miles of the Northern Terminal, as discussed in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region. Although the location for this system has not yet been determined, conceptual locations and connections to the alternative routes have been provided by TransWest. The types of impacts associated with constructing and operating this system would be similar to those discussed under Alternative I-A but would be significantly reduced in scope and intensity. The ground electrode systems are detailed in Section 2.4.3, Facilities Common to All Action Alternatives. Direct impacts to wildlife habitat would include those resulting from construction of the ground electrode site and access roads. Indirect impacts to wildlife would include disturbance from operation activities and habitat fragmentation resulting from access road construction and the operation of the low voltage overhead line.

The ground electrode overhead line would be similar to a modified 34.5-kV distribution transmission line as discussed in Section 2.4.3. **Table 3.7-17** summarizes impacts associated with the seven combinations of alternative route and location possibilities for the northern ground electrode system.

Table 3.7-17 Summary of Region I Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis
Separation Flat – All Alternative Routes	• Approximately 12 miles of low-voltage, high capacity ground electrode system interconnection lines[2]. • Approximately 121 acres of construction, 36 acres of operation, and 10,179 acres of indirect impacts to pronghorn winter/yearlong range would occur. • Approximately 120 acres of construction and 35 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 6 acres of construction and 2 acres of operation impacts to waterfowl potential habitat would occur.
Bolten Ranch – All Alternative Routes	• Approximately 15 miles of interconnection lines[2]. • Approximately 151 acres of construction, 52 acres of operation, and 2,573 acres of indirect impacts to pronghorn winter/yearlong range would occur. • Approximately 150 acres of construction and 52 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 1 acre of construction and no operation impacts to waterfowl potential habitat would occur.
Eight Mile Basin – All Alternative Routes	• Approximately 5 miles of interconnection lines[2]. • Approximately 88 acres of construction, 18 acres of operation, and 4,608 acres of indirect impacts to mule deer winter/yearlong range would occur. • Approximately 66 acres of construction, 13 acres of operation, and 3,448 acres of indirect impacts to pronghorn winter/yearlong range would occur. • Approximately 86 acres of construction and 17 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 5 acres of construction and 1 acre of operation impacts to waterfowl potential habitat would occur.
Separation Creek – All Alternative Routes	• Approximately 2 miles of interconnection lines[2]. • Approximately 20 acres of construction, 3 acres of operation, and 2,505 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 55 acres of construction, 8 acres of operation, and 6,879 acres of indirect impacts to pronghorn winter/yearlong crucial range would occur. • Approximately 29 acres of construction, 4 acres of operation, and 3,677 acres of indirect impacts to elk winter range would occur. • Approximately 74 acres of construction and 11 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction and <1 acre of operation impacts to waterfowl potential habitat would occur.

[1] Ground electrode systems are described in detail in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region.

[2] Length refers to length of low-voltage, high capacity ground electrode system interconnection lines (similar to 34.5-kV lines) and serves as a proxy metric for avian collision potential.

Region I Conclusion

Based on a comparison of impact parameters for Region I alternatives, potential construction and operation impacts to wildlife habitat would be greatest for Alternative I-C, as presented in **Table 3.7-15**. Potential impacts to wildlife habitat under Alternatives I-A, I-B, and I-D would be relatively low compared

to those of Alternative I-C. Alternative I-C would result in the greatest direct and indirect impacts to big game, small game, and nongame habitat in comparison to the other Region I alternatives. Alternative I-C would result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-8**. Even though the greatest level of impacts would be associated with Alternative I-C, project effects on wildlife species and their habitat would be avoided or considered to be low in magnitude and short-term in duration after implementation of BMPs, design features, and additional mitigation measures (Section 3.7.6 and **Appendix C**).

3.7.6.4 Region II

As presented in **Table 3.7-18**, the Project alternatives traverse five national forests. This table presents miles of NFS land crossed by alternatives and associated Project components in order to provide a general understanding of potential for impacts. Additional information on potential impacts to wildlife in the national forests is provided in the Region II and Region III discussions.

Table 3.7-18 Miles of National Forest Traversed by Region, Alternative or Alternative Variation

	Region II									Region III			
National Forests	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F	Alternative II-G	Reservation Ridge Alternative Variation	Comparable Portion of Reservation Ridge Alternative	Alternative III-A	Ox Valley East Alternative Variation	Ox valley West Alternative Variation	Pinto Alternative Variation
Uinta-Wasatch-Cache	18	-	-	-	8	8	18	2	2	-	-	-	-
Manti-La Sal	1	15	-	8	1	1	1	-	-	-	-	-	-
Ashley	-	-	-	-	10	-	-	1	1	-	-	-	-
Fishlake	-	2	34	-	-	-	-	-	-	-	-	-	-
Dixie	-	-	-	-	-	-	-	-	-	20	16	16	20
Total miles of forest traversed by alternative route in region	19	17	34	8	19	9	19	3	3	20	16	16	34

Note: While Alternative II-D alignment is not within the Ashley National Forest, because the route so closely follows the boundary, there are potential associated impacts that are discussed in the Region II section.

Table 3.7-19 provides a tabulation of impacts to wildlife associated with the alternative routes in Region II. **Table 3.7-20** provides a tabulation of impacts to USFS MIS, which are not classified as special status, associated with the alternative routes in Region II. MIS that are classified as special status species are discussed in Section 3.8, Special Status Wildlife Species. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

<u>Alternative II-A (Applicant Proposed)</u>

Habitat Disturbance and Fragmentation

Alternative II-A would traverse approximately 258 miles of wildlife habitat in Colorado and Utah. Approximately 173 miles (67 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-A potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major

sources of disturbance along Alternative II-A in western Colorado and eastern Utah include several livestock operation roads, a major surface coal mining operation located within the Alternative II-A potential disturbance areas, and the Town of Dinosaur, Colorado. Wildlife habitat along Alternative II-A in Moffat County, Colorado, is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agricultural operations near the communities of Roosevelt and Duchesne. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Fort Duchesne, Roosevelt, and Fruitland. Wildlife habitat in Wasatch County, Utah becomes less fragmented as the landscape becomes more forested and mountainous. In Utah County, Utah, the major sources of fragmentation within the Alternative II-A potential disturbance areas are US-89 and US-6, which parallel Alternative II-A for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the Town of Nephi, Utah, and the IPP located north of Delta, Utah. A total of 1,102 miles of existing roads are located within the Alternative II-A potential disturbance areas, as presented in **Table 3.7-21**. This represents the highest existing road density within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

Sensitive big game habitats that would be impacted under Alternative II-A include mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range (**Table 3.7-19**). Implementation of the BLM, CPW, UDWR, and USFS restrictions to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30 would prevent direct impacts to wintering big game species during applicant construction and operation activities but would not influence indirect impacts from public use of newly created or improved access. Alternative II-A would result in the construction and operation disturbance of 3,538 acres and 957 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.03 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-A also would result in the construction disturbance of 61 acres and operation disturbance of 18 acres of waterfowl habitat. These areas represent 0.02 percent and 0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-A generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-A would result in the construction and operation disturbance of 3,538 acres and 957 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.03 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Fruitland Micro-siting Options

TransWest has developed three potential options to avoid or minimize impacts to greater sage-grouse habitat, private land development, and existing conservation easements along Alternative II-A. These are referred to as Fruitland Micro-siting Options 1, 2, and 3 (**Figure 3.7-4**). These micro-siting options would result in similar direct impacts to wildlife habitat in comparison to Alternative II-A. All three micro-siting options are located in the western portion of Duchesne County along Alternative II-A.

The Fruitland Micro-siting Option 1 deviates from Alternative II-A to the south and reconnects with the same alternative just to the east of Red Creek. The entire length of the option is approximately 15 miles long, of which 3 miles would be co-located with existing transmission lines. This would result in an increase in the amount of habitat fragmentation in comparison to Alternative II-A, which would be co-located with existing transmission lines for a total of 5 miles. This micro-siting option would pass through approximately 2 miles of the Sand Wash/Sink Draw Conservation Easement. In addition, Micro-siting Option 1 would result in an increase of 103 acres of construction impacts and 23 acres of operation impacts to potential wildlife habitat in comparison to Alternative II-A.

The Fruitland Micro-siting Option 2 deviates from Alternative II-A to the south and reconnects with the same alternative just west of the Duchesne-Wasatch county line. The entire length of the option is approximately 13 miles long, all of which would be co-located with existing transimission lines. This would result in a decrease in the amount of habitat fragmentation in comparison to Alternative II-A, which would be co-located with existing transmission lines for a total of 5 miles. This micro-siting option would pass through approximately 5 miles of the Sand Wash/Sink Draw Conservation Easement. In addition, Micro-siting Option 2 would result in an increase of 7 acres of construction impacts and a decrease of 11 acres of operation impacts to potential wildlife habitat in comparison to Alternative II-A.

The Fruitland Micro-siting Option 3 deviates from Alternative II-A further to the south than Options 1 or 2 and reconnects with the same alternative just west of the Duchesne-Wasatch county line. The entire length of the option is approximately 13 miles long, of which 2 miles would be co-located with existing transmission lines. This would result in an increase in the amount of habitat fragmentation in comparison to Alternative II-A, which would be co-located with existing transmission lines for a total of 5 miles. This micro-siting option would pass through approximately 1 mile of the Sand Wash/Sink Draw Conservation Easement. In addition, Micro-siting Option 3 would result in an increase of 7 acres of construction impacts and 21 acres of operation impacts to potential wildlife habitat in comparison to Alternative II-A.

Strawberry IRA Micro-siting Options

TransWest has developed two potential options to avoid or minimize impacts to national forest IRAs along Alternative II-A. These are referred to as Strawberry IRA Micro-siting Options 2 and 3. These micro-siting options would result in similar direct impacts to wildlife habitat in comparison to Alternative II-A. Micro-siting Options 2 and 3 would reduce the amount of habitat fragmentation in comparison to Alternative II-A as they would be co-located adjacent to an existing transmission line for approximately 4 miles. Any other differences in impacts to wildlife habitat are anticipated to be negligible in comparison to Alternative II-A.

Alternative II-B

Habitat Disturbance and Fragmentation

Alternative II-B would traverse approximately 346 miles of wildlife habitat in Colorado and Utah. Approximately 127 miles (36 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-B potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-B in western Colorado include roads from several livestock operations and oil infrastructure located within the potential disturbance areas and the Town of Rangely, Colorado. Wildlife habitat along Alternative II-B in Rio Blanco County, Colorado, also is fragmented by SH-64, which parallels the potential disturbance areas for several miles east of Rangely and SH-138 and crosses the potential disturbance area south of Rangely. Energy development and infrastructure

Table 3.7-19 Summary of Region II Alternative Route Impact Parameters for Wildlife

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts
Big Game Species																					
Colorado pronghorn crucial winter range (acres)	–	–	–	29	8	4,905	29	8	4,905	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II big game analysis area	–	–	–	0.05	0.01	8.67	0.05	0.01	8.67	–	–	–	–	–	–	–	–	–	–	–	–
Utah pronghorn crucial yearlong range (acres)	187	43	25,768	3	1	380	–	–	–	187	43	26,213	187	43	25,830	187	43	26,212	187	43	25,769
Percentage of existing habitat within the Region II big game analysis area	0.02	<0.01	2.78	<0.01	<0.01	0.04	–	–	–	0.02	<0.01	2.83	0.02	<0.01	2.79	0.02	<0.01	2.83	0.02	<0.01	2.78
Utah pronghorn substantial yearlong range (acres)	78	14	8,840	322	69	42,207	426	95	47,383	15	5	2,997	220	51	21,505	15	5	2,997	187	43	25,768
Percentage of existing habitat within the Region II big game analysis area	0.02	<0.01	1.70	0.06	0.01	8.13	0.08	0.02	9.13	<0.01	<0.01	0.58	0.04	0.01	4.14	<0.01	<0.01	0.58	0.02	<0.01	2.78
Colorado mule deer crucial winter range (acres)	271	52	29,714	578	121	41,347	578	121	41,347	271	52	29,736	271	52	29,736	271	52	29,736	271	52	29,725
Percentage of existing habitat within the Region II big game analysis area	0.11	0.02	11.71	0.23	0.05	16.29	0.23	0.05	16.29	0.11	0.02	11.72	0.11	0.02	11.72	0.11	0.02	11.72	0.11	0.02	11.71
Utah mule deer crucial winter range (acres)	744	223	80,183	656	208	61,709	726	183	76,026	542	176	52,587	706	229	61,665	555	183	47,372	765	218	91,294
Percentage of existing habitat within the Region II big game analysis area	0.03	0.01	3.66	0.03	0.01	2.82	0.03	0.01	3.47	0.02	0.01	2.40	0.03	0.01	2.82	0.03	0.01	2.16	0.03	<0.01	4.17
Colorado elk crucial winter range (acres)	31	11	5,474	185	39	105,168	185	39	105,168	31	11	36,881	31	11	36,881	31	11	36,881	31	11	5,474
Percentage of existing habitat within the Region II big game analysis area	0.03	<0.01	0.56	0.22	0.05	125.37	0.22	0.05	125.37	0.04	0.01	43.97	0.04	0.01	43.97	0.04	0.01	43.97	0.04	<0.01	0.56
Utah elk crucial winter range (acres)	987	309	99,416	507	163	50,989	70	16	6,929	723	244	68,724	1,093	360	100,072	1,000	343	87,843	1,010	322	110,510
Percentage of existing habitat within the Region II big game analysis area	0.07	0.02	7.53	0.04	0.01	3.86	0.01	<0.01	0.53	0.05	0.02	5.21	0.08	0.03	7.58	0.08	0.03	6.66	0.08	0.02	8.38
Utah moose occupied habitat (acres)	668	241	63,212	273	97	28,469	254	54	22,227	440	156	39,727	736	282	70,499	711	262	70,499	693	261	63,974
Percentage of existing habitat within the Region II big game analysis area	0.11	0.04	10.72	0.05	0.02	4.83	0.04	0.01	3.77	0.07	0.03	6.74	0.12	0.05	11.96	0.12	0.04	11.96	0.12	0.04	10.85
Utah Rocky Mountain bighorn sheep crucial yearlong range (acres)	19	10	1,843	2	1	1,819	2	1	1,819	150	39	16,395	0	0	881	150	39	16,396	20	12	2,120
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	0.25	<0.01	<0.01	0.25	<0.01	<0.01	0.25	0.02	0.01	2.25	–	–	0.12	0.02	0.01	2.25	<0.01	<0.01	0.29
Utah desert bighorn sheep occupied habitat (acres)	–	–	–	87	19	8,799	87	19	10,126	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II big game analysis area	–	–	–	0.03	0.01	3.52	0.03	0.01	4.05	–	–	–	–	–	–	–	–	–	–	–	–
Moose parturition range	–	–	346	41	13	3,989	110	26	10,518	15	4	992	66	18	4,885	57	20	4,216	–	–	346
Percentage of existing habitat within the Region II big game analysis area	–	–	0.20	0.12	0.04	11.30	0.31	0.07	29.79	0.04	0.01	2.81	0.19	0.05	13.83	0.16	0.06	11.94	–	–	0.20
Mule deer parturition range	333	121	37,160	652	167	54,252	593	126	48,594	624	197	59,321	405	117	52,892	726	252	64,234	327	121	37,675
Percentage of existing habitat within the Region II big game analysis area	0.02	<0.01	1.76	0.04	0.01	3.36	0.04	0.01	3.01	0.04	0.01	3.67	0.03	0.01	3.27	0.04	0.02	3.97	0.02	<0.01	1.79
Pronghorn parturition range	455	137	53,604	674	162	98,155	575	151	84,419	899	232	102,973	521	121	60,641	899	232	102,973	455	137	53,604
Percentage of existing habitat within the Region II big game analysis area	0.03	0.01	3.87	0.05	0.01	7.09	0.04	0.01	6.10	0.06	0.02	7.44	0.04	0.01	4.38	0.06	0.02	7.44	0.03	0.01	3.87
Rocky Mountain elk parturition range	61	23	5,779	108	24	7,128	108	24	7,128	56	18	9,690	–	–	–	56	18	9,690	58	21	6,052
Percentage of existing habitat within the Region II big game analysis area	0.04	0.01	3.38	0.06	0.01	4.17	0.06	0.01	4.17	0.03	0.01	5.66	–	–	–	0.03	0.01	5.66	0.03	0.01	3.54

Table 3.7-19 Summary of Region II Alternative Route Impact Parameters for Wildlife

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts
Small Game and Nongame Species																					
Upland game bird, small game mammal, furbearer, small nongame mammal, and reptile habitat (acres)[1]	3,538	957	387,692	4,621	1,144	490,819	4,795	1,115	512,102	3,809	1,043	398,735	3,741	997	400,930	4,057	1,148	416,647	3,486	960	392,695
Percentage of existing habitat within Region II wildlife analysis area	0.03	<0.01	3.64	0.04	0.01	4.61	0.05	0.01	4.81	0.04	0.01	3.75	0.04	0.01	3.77	0.04	0.01	3.92	0.03	<0.01	3.69
Waterfowl habitat (acres)[2]	61	18	9,476	55	12	6,263	59	14	6,766	34	9	5,047	68	17	8,225	35	10	5,155	60	17	7,014
Percentage of existing waterfowl habitat within Region II wildlife analysis area	0.02	<0.01	3.65	0.02	<0.01	2.41	0.02	0.01	2.60	0.01	<0.01	1.94	0.03	0.01	3.17	0.01	<0.01	1.98	0.02	<0.01	2.70
Relative Collision Potential for Waterfowl																					
Length of transmission line (miles)[3]	258			346			365			259			268			265			252		

[1] Vegetation communities used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities used to calculate acreages of waterfowl habitat disturbance include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Table 3.7-20 Summary of Region II Alternative Route Impact Parameters for USFS Management Indicator Species

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construc tImpacts	Operation Impacts	Indirect Impacts
Ashley National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species[1]																					
White-tailed ptarmigan Habitat category: Tundra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Warbling vireo Habitat categories: Aspen forest and woodland, pinyon-juniper woodland, woody riparian and wetlands	–	–	–	–	–	–	–	–	–	–	–	801	23	3	7,355	–	–	801	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	–	–	–	–	–	–	–	0.36	0.01	<0.01	3.32	–	–	0.36	–	–	–
Song sparrow Habitat categories: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, woody riparian and wetlands	–	–	–	–	–	–	–	–	–	–	–	2,540	63	7	14,900	–	–	2,540	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	–	–	–	–	–	–	–	0.10	<0.01	<0.01	0.61	–	–	0.10	–	–	–
Lincoln's sparrow Habitat categories: Aspen forest and woodland, herbaceous wetland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	–	–	–	–	–	–	–	–	831	25	3	7,450	0	0	832	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	–	–	–	–	–	–	–	0.09	<0.01	<0.01	0.82	–	–	0.09	–	–	–
Fishlake National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species[1]																					
Song sparrow Habitat categories: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	–	–	–	15	4	4,609	493	110	51,165	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	<0.01	0.19	0.02	<0.01	2.10	–	–	–	–	–	–	–	–	–	–	–	–
Hairy woodpecker Habitat categories: Agricultural land, aspen forest and woodland, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	–	–	–	5	2	2,561	249	58	27,683	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.41	0.04	0.01	4.38	–	–	–	–	–	–	–	–	–	–	–	–
Western bluebird Habitat categories: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, grassland, montane grassland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	11	3	3,727	276	64	30,444	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.43	0.03	0.01	3.48	–	–	–	–	–	–	–	–	–	–	–	–

Table 3.7-20 Summary of Region II Alternative Route Impact Parameters for USFS Management Indicator Species

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construc tImpacts	Operation Impacts	Indirect Impacts
Mountain bluebird Habitat categories: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, grassland, montane grassland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	11	3	3,727	276	64	30,444	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.43	0.03	0.01	3.48	–	–	–	–	–	–	–	–	–	–	–	–
Yellow warbler Habitat categories: Aspen forest and woodland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	5	2	2,568	249	58	27,687	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.40	0.04	0.01	4.37	–	–	–	–	–	–	–	–	–	–	–	–
MacGillivray's warbler Habitat categories: Aspen forest and woodland, deciduous forest, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	5	2	2,568	249	58	27,687	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.40	0.04	0.01	4.37	–	–	–	–	–	–	–	–	–	–	–	–
Brewer's sparrow Habitat category: Sagebrush shrubland	–	–	–	4	1	871	85	19	7,646	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.32	0.03	0.01	2.82	–	–	–	–	–	–	–	–	–	–	–	–
Vesper sparrow Habitat categories: Agricultural land, grassland, montane grassland, sagebrush shrubland	–	–	–	9	3	2,030	91	20	8,137	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	–<0.01	0.70	0.03	0.01	2.82	–	–	–	–	–	–	–	–	–	–	–	–
Lincoln's sparrow Habitat Categories: Aspen forest and woodland, herbaceous wetland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	–	–	–	5	2	2,568	249	58	27,688	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	<0.01	<0.01	0.28	0.03	0.01	3.06	–	–	–	–	–	–	–	–	–	–	–	–
Uinta-Wasatch-Cache National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species[1]																					
American beaver Habitat categories: Open water, woody riparian and wetlands	1	1	900	–	–	17	–	–	–	–	–	42	0	0	90	0	0	94	1	1	900
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	2.81	–	–	0.05	–	–	–	–	–	0.13	–	–	0.28	–	–	0.29	<0.01	<0.01	2.81
Manti-La Sal National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species[1]																					
Percentage of existing habitat within the Region II MIS Analysis Area	-	-	0.16	0.03	0.01	2.16	-	-	-	0.01	<0.01	0.89	-	-	0.19	-	-	0.19	-	-	0.16

[1] MIS that are classified as special status species are presented in Section 3.8, Special Status Wildlife Species.

Note: Please refer to Section 3.5.6.2 for indirect impacts by vegetation community/habitat type.

Table 3.7-21 Summary of Existing Conditions by Alternative within Region II

Alternative	Length of Proposed Transmission Line (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Existing Roads within Region II Disturbance Areas	Miles of Roads within Region II Disturbance Areas/Miles of Alternative[2]
II-A	258	86	173	1,102	4.27
II-B	346	221	127	1,132	3.27
II-C	365	247	121	1,513	4.15
II-D	259	189	70	755	2.92
II-E	268	97	171	1,087	4.06
II-F	265	170	95	941	3.55
II-G	252	91	160	1,028	4.08

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

[2] Indicator of existing habitat fragmentation.

fragments wildlife habitat in the Alternative II-B potential disturbance areas along the remainder of the alternative route through Rio Blanco County. Existing disturbance along Alternative II-B would be limited primarily to county and USFS maintenance roads in Garfield and Mesa counties, Colorado, until it reaches I-70 and follows the I-70 corridor into Utah. This section of Alternative II-B would parallel I-70 across all of Grand County, Utah, and is highly fragmented by the interstate highway, multiple state highways and county roads, as well as the communities of Harley Dome, Thompson, and Crescent Junction, Utah. Major disturbance also is caused by the Union Pacific Railroad that weaves in and out of the Alternative II-B potential disturbance areas for approximately 40 miles to the border of Emery County. Alternative II-B would parallel US-6/US-191 north from I-70 to the border of Carbon County where the alternative would head west. Disturbances along this stretch of Alternative II-B include I-70, US-6/US-191, the Union Pacific Railroad, Green River Municipal Airport, and Woodside, Utah. Pivot agriculture, oil and gas infrastructure, and SR-31 cause the majority of disturbance along this portion of the alternative route until Alternative II-B reaches the Manti-La Sal National Forest. At this point, disturbance and fragmentation are limited to USFS and county roads to the border of Sanpete County. Wildlife habitat disturbances in Sanpete County include the towns of Mount Pleasant and Fountain Green, Utah, and SH-146 and SR-132. The outskirts of Nephi, Utah, heavy agriculture, I-15, and SR-132 cause habitat fragmentation in Juab County. The final stretch of Alternate II-B in Millard County would be disturbed by SR-132, SR-125, SR-174, US-6, and the Union Pacific Railroad. Pivot agriculture and the IPP also exist along the alternative route where it terminates west of the Town of Delta, Utah. The remaining segments of Alternative II-B are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 1,132 miles of existing roads are located within the Alternative II-B potential disturbance areas, as presented in **Table 3.7-21**. This represents the sixth highest existing road density within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-B generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-B include pronghorn crucial winter range, mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range (**Table 3.7-19**). Alternative II-B would result in the construction and operation disturbance of 4,621 acres and 1,144 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 percent and 0.01 percent

of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-B also would result in the construction disturbance of 5 acres and operation disturbance of 12 acres of waterfowl habitat. These areas represent 0.02 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-B generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-B would result in the construction and operation disturbance of 4,621 acres and 1,144 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative II-C

Habitat Disturbance and Fragmentation

Alternative II-C would traverse approximately 365 miles of wildlife habitat in Colorado and Utah. Approximately 121 miles (33 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-C potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Alternative II-C follows the same route as Alternative II-B (see above) until Alternative II-C heads west near Woodside, Utah, in Emery County. Most of the existing disturbance and fragmentation in the remainder of Emery County is near the Town of Emery. Existing disturbance includes the Town of Emery, SR-10, and multiple agricultural operations along the alternative route. There also is an open pit mine within the Alternative II-C potential disturbance areas south of Castle Dale, Utah. Disturbance and fragmentation are minimized in the mountainous regions of Sevier County, consisting mainly of county and USFS roads. However, I-70 would be crossed twice and part of the Town of Aurora, Utah, occurs within the Alternative II-C potential disturbance areas. Wildlife habitat along Alternative II-C is highly fragmented throughout most of Millard County beginning where the potential disturbance areas would parallel US-50 to Scipio. At this point, the alternative route would track west, cross the I-15 corridor, and skirt the southern boundary of the Fishlake National Forest to follow US-50 to the Delta metropolitan area. The remaining portions of the Alternative II-C corridor are moderately fragmented by county roads, low density oil, gas, and livestock operations, agriculture, and private residences. A total of 1,513 miles of existing roads are located within the Alternative II-C potential disturbance areas, as presented in **Table 3.7-21**. This represents the second highest existing road density within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-C generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-C include pronghorn crucial winter range, mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range (**Table 3.7-19**). Alternative II-C would result in the construction and operation disturbance of 4,795 acres and 1,115 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II

wildlife analysis area. Alternative II-C also would result in the construction disturbance of 59 acres and operation disturbance of 14 acres of waterfowl habitat. These areas represent 0.02 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-C generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-C would result in the construction and operation disturbance of 4,795 acres and 1,115 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative II-D

Habitat Disturbance and Fragmentation

Alternative II-D would traverse approximately 259 miles of wildlife habitat in Colorado and Utah. Approximately 70 miles (27 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-D potential disturbance area relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-D in western Colorado and eastern Utah include several livestock operation roads, oil and gas infrastructure, and the Town of Dinosaur, Colorado. Wildlife habitat along Alternative II-D in Moffat County, Colorado, also is fragmented by the existence of US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Jensen. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, and center pivot agricultural operations. Disturbance and fragmentation increases in western Carbon County, with an increased presence of oil and gas infrastructure and several major roadways (US-191 and US-6) along this section of Alternative II-D. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the Town of Nephi, Utah, and the IPP, located north of Delta, Utah. A total of 755 miles of existing roads are located within the Alternative II-D potential disturbance areas, as presented in **Table 3.7-21**. This represents the lowest existing road density within the disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-D generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-D include mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range (**Table 3.7-19**). Alternative II-D would result in the construction and operation disturbance of 3,809 acres and 1,043 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-D also would result in the construction disturbance of 34 acres and operation disturbance of 9 acres of waterfowl habitat. These areas represent 0.01 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-D generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-D would result in the construction and operation disturbance of 3,809 acres and 1,043 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative II-E

Existing Habitat Disturbance and Fragmentation

Alternative II-E would traverse approximately 268 miles of wildlife habitat in Colorado and Utah. Approximately 171 miles (64 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-E potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-E in western Colorado and eastern Utah include several livestock operations, a major surface coal mining operation, and the Town of Dinosaur, Colorado. Wildlife habitat along Alternative II-E in Moffat County, Colorado, also is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah include oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Jensen. In Duchesne County, Utah, sources of disturbance include US-40, oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Bridgeland, Ioca, and Roosevelt. In Utah County, Utah, the major source of fragmentation within the Alternative II-E potential disturbance areas is US-89 and US-6, which parallel Alternative II-E for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the Town of Nephi, and the IPP, located north of Delta, Utah. A total of 1,087 miles of existing roads are located within the Alternative II-E potential disturbance areas, as presented in **Table 3.7-21**. This represents the fourth highest existing road density within the disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-E generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-E include mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range (**Table 3.7-19**). Alternative II-E would result in the construction and operation disturbance of 3,741 acres and 997 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-E also would result in the construction disturbance of 68 acres and operation disturbance of 17 acres of waterfowl habitat. These areas represent 0.03 percent and 0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-E generally would be same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-E would result in the construction and operation disturbance of 3,741 acres and 997 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative II-F

Habitat Disturbance and Fragmentation

Alternative II-F would traverse approximately 265 miles of wildlife habitat in Colorado and Utah. Approximately 95 miles (36 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-19**. Existing conditions within the Alternative II-F potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-F in western Colorado and eastern Utah include several livestock operations, oil and gas infrastructure, and the Town of Dinosaur, Colorado. Wildlife habitat along Alternative II-F in Moffat County, Colorado, also is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Roosevelt. In Duchesne County, Utah, sources of disturbance also include oil and gas operations, livestock operations, and center pivot agriculture operations. In Utah County, Utah, the major source of fragmentation within the Alternative II-F potential disturbance areas is US-89 and US-6, which parallel Alternative II-F for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, and the IPP, located north of Delta. The remaining segments of Alternative II-F are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 941 miles of existing roads are located within the Alternative II-F potential disturbance areas as presented in **Table 3.7-19**. This represents the fifth highest existing road density within the disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-F generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-F include mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range. Alternative II-F would result in the construction and operation disturbance of 4,057 acres and 1,148 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region II wildlife analysis area. Alternative II-F also would result in the construction disturbance of 35 acres and operation disturbance of 10 acres of waterfowl habitat. These areas represent 0.01 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-F generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-F would result in the construction and operation disturbance of 4,057 acres and 1,148 acres, respectively, of potential small mammal and reptile habitat. These areas represent 0.04 percent and 0.01 percent of the potential small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative II-G (Agency Preferred)

Habitat Disturbance and Fragmentation

Alternative II-G would traverse approximately 252 miles of wildlife habitat in Colorado and Utah. Approximately 160 miles (64 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-21**. Existing conditions within the Alternative II-G potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-G in western Colorado and eastern Utah include several livestock operation roads, a major surface coal mining operation, and the Town of Dinosaur, Colorado. Wildlife habitat along Alternative II-G in Moffat County, Colorado, is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agricultural operations near the communities of Roosevelt and Duchesne. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Fort Duchesne, Roosevelt, and Fruitland. Wildlife habitat in Wasatch County, Utah, becomes less fragmented as the landscape becomes more forested and mountainous. In Utah County, Utah, the major sources of fragmentation within the Alternative II-G potential disturbance areas are US-89 and US-6, which parallel Alternative II-G for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the Town of Nephi, Utah, and the IPP located north of Delta, Utah. A total of 1,028 miles of existing roads are located within the Alternative II-A potential disturbance areas, as presented in **Table 3.7-21**. This represents the second highest existing road density within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative II-G generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-G include mule deer crucial winter range, elk crucial winter range, pronghorn crucial yearlong range, and Rocky mountain bighorn sheep crucial yearlong range. Alternative II-G would result in the construction and operation disturbance of 3,486 acres and 960 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.03 percent and <0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region II wildlife analysis area. Alternative II-G also would result in the construction disturbance of 60 acres and operation disturbance of 17 acres of waterfowl habitat. These areas represent 0.02 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative II-G generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-19** presents a comparison of impacts to habitat in Region II. Alternative II-G would result in the construction and operation disturbance of 3,486 acres and 960 acres, respectively, of potential small mammal and reptile habitat. These areas represent 0.03 percent and <0.01 percent of the potential small mammal and reptile habitat within the Region II wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

USFS Management Indicator Species

Four national forests would be traversed by the Project in Region II. A total of 13 wildlife species are identified as MIS that are not otherwise classified as special status species. Impacts to these species are presented in **Table 3.7-20**.

Reservation Ridge Alternative Variation

The BLM has developed the Reservation Ridge Alternative Variation to avoid potential impacts to greater sage-grouse in the Emma Park area (**Figure 2-5**). Information regarding potential construction and operation impacts from the Reservation Ridge Alternative Variation and comparable segments of Alternative II-F are located in **Table 3.7-22**. Impacts to wildlife habitat resulting from this alternative variation are varied. Selection of this alternative variation would result in a minor increase of construction and operation impacts to conifer forest habitat along Reservation Ridge and a corresponding minor decrease in impacts to sagebrush shrubland habitat in Emma Park.

Table 3.7-22 Summary of Region II Alternative Variation Impact Parameters for Wildlife

Impact Parameters[1]	Reservation Ridge Alternative Variation			Comparable Portion of Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species						
Utah mule deer crucial winter range (acres)	–	–	237	–	–	673
Percentage of existing habitat within the Region II big game analysis area	–	–	0.01	–	–	0.03
Utah moose occupied habitat (acres)	–	–	–	–	–	–
Percentage of existing habitat within the Region II big game analysis area	–	–	–	–	–	–
Utah elk crucial winter range (acres)	55	16	5,468	191	63	16,400
Percentage of existing habitat within the Region II big game analysis area	–	–	0.41	0.01	–	1.24
Utah Rocky Mountain bighorn sheep crucial yearlong range (acres)	–	–	1,262	–	–	–
Percentage of existing habitat within the Region II big game analysis area	–	–	0.17	–	–	–
Small Game and Nongame Species						
Small game and nongame potential habitat (acres)	413	139	35,994	436	141	38,086
Percentage of potential habitat within the Region II wildlife analysis area	–	–	0.34	–	–	0.36

Table 3.7-22 Summary of Region II Alternative Variation Impact Parameters for Wildlife

Impact Parameters[1]	Reservation Ridge Alternative Variation			Comparable Portion of Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Waterfowl						
Waterfowl potential habitat (acres)[2]	<1	<1	111	<1	1	255
Percentage of potential waterfowl habitat within the Region II wildlife analysis area	–	–	0.04	–	–	0.10
Relative Collision Potential for Waterfowl						
Length of transmission line (miles)[3]	20			21		
Ashley National Forest Management Indicator Species not Otherwise Analyzed as Special Status Species[1]						
White-tailed ptarmigan potential habitat (acres) Habitat association: Tundra	–	–	–	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	–	–	–	–
Warbling Vireo potential habitat (acres) Habitat associations: Aspen forest and woodland, pinyon-juniper woodland, woody riparian and wetlands	3	1	2,207	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	<0.01	1.00	–	–	–
Song sparrow potential habitat (acres) Habitat associations: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, herbaceous wetland, montane shrubland, pinyon-juniper woodland, tundra, woody riparian and wetlands	15	4	9,499	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	–	0.39	–	–	–
Lincoln's sparrow potential habitat (acres) Habitat associations: Aspen forest and woodland, woody riparian and wetlands	3	1	2,207	–	–	–
Percentage of existing habitat within the Region II MIS Analysis Area	–	<0.01	0.24	–	–	–
Uinta-Wasatch-Cache National Forest Management Indicator Species not Otherwise Analyzed as Special Status Species						
American beaver potential habitat (acres) Habitat associations: Open water, woody riparian and wetlands	<1	<1	14	–	–	4
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	0.04	–	–	0.01

[1] Vegetation communities used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities used to calculate acreages of waterfowl habitat disturbance include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Alternative Connectors in Region II

If utilized, the Roan Cliffs, Castle Dale, Price, Lynndyl, and IPP East alternative connectors would include minimal increases of total habitat disturbance relative to the total impacts associated with Region II alternatives. **Table 3.7-23** summarizes impacts associated with the Alternative Connectors in Region II.

Table 3.7-23 Summary of Region II Alternative Connector Impact Parameters for Wildlife Species

Alternative Connector	Analysis
Lynndyl Alternative Connector (Alternatives II-B and II-C)	• Approximately 24 miles in length.[1] • Approximately 268 acres of construction, 59 acres of operation, and 29,278 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 297 acres of construction, 66 acres of operation, and 36,037 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction, <1 acre of operation, and 31 acres of indirect impacts to waterfowl potential habitat would occur. • Fishlake National Forest would be crossed. Potential impacts to MIS species would range from 3 acres from construction and 3 acres from operation to song sparrow to 1 acre from construction and <1 acre from operation to Brewer's sparrow.
IPP East Alternative Connector (Alternatives II-A and II-B)	• Approximately 4 miles in length.[1] • Approximately 27 acres of construction, 5 acres of operation, and 4,361 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 44 acres of construction, 7 acres of operation, and 6,435 acres of indirect impacts to small game and nongame potential habitat would occur. • No construction or operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS within the forest in which a species is designated would occur.
Roan Cliffs Alternative Connector (Alternatives II-E and II-F)	• Approximately 2 miles in length.[1] • Approximately 33 acres of construction, 13 acres of operation, and 5,602 acres of indirect impacts to moose crucial winter range would occur. • Approximately 33 acres of construction, 13 acres of operation, and 3,253 acres of indirect impacts to elk crucial winter range would occur. • Approximately 32 acres of construction, 12 acres of operation, and 5,327 acres of indirect impacts to small game and nongame potential habitat would occur. • No construction or operation impacts to waterfowl potential habitat would occur; approximately 8 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS within the forest in which a species is designated would occur.
Castle Dale Alternative Connector	• Approximately 11 miles in length.[1] • Approximately 30 acres of construction, 6 acres of operation, and 5,300 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 136 acres of construction, 27 acres of operation, and 19,420 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 3 acres of construction, 1 acre of operation, and 590 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS within the forest in which a species is designated would occur.
Price Alternative Connector	• Approximately 18 miles in length.[1] • Approximately 21 acres of construction, 8 acres of operation, and 5,252 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 252 acres of construction, 62 acres of operation, and 27,638 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 263 acres of construction, 66 acres of operation, and 31,795 acres of indirect impacts to elk crucial winter range would occur. • Approximately 6 acres of construction, 3 acres of operation, and 1,386 acres of indirect impacts to moose crucial winter range would occur. • Approximately 236 acres of construction, 60 acres of operation, and 29,340 acres of indirect impacts to small game and nongame potential habitat would occur.

Table 3.7-23 Summary of Region II Alternative Connector Impact Parameters for Wildlife Species

Alternative Connector	Analysis
	• Approximately 1 acre of construction, <1 acre of operation, and 126 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS (only acres within the forest in which a species is designated) would occur.

[1] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Region II Conclusion

Based on a comparison of impact parameters for Region II alternatives, potential construction and operation impacts to wildlife would be varied across all alternatives as shown in **Table 3.7-19**. Alternative II-F would result in the greatest direct and indirect impacts to big game habitat in comparison to the other Region II alternatives. Alternative II-C would result in the greatest direct and indirect impacts to small game habitat in comparison to the other Region II alternatives (**Table 3.7-19**). Alternative II-E would result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-11**. Although potential impacts to these separate groups of species are varied, Alternative II-C would result in the greatest potential impacts to wildlife in terms of the total acreage of construction and operation impacts combined. Potential impacts to wildlife species present within the five national forests also would be greatest for Alternative II-C as shown in **Table 3.7-20**. Even though the greatest level of impacts are associated with Alternative II-C, project effects on wildlife species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.4 and **Appendix C**). Migratory birds and associated habitat are addressed in Section 3.22, Migratory Birds.

3.7.6.5 Region III

Table 3.7-24 provides a tabulation of impacts associated with the alternative routes in Region III. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Alternative III-A (Applicant Proposed)

Habitat Disturbance and Fragmentation

Alternative III-A would traverse approximately 276 miles of wildlife habitat in Utah and Nevada. Approximately 185 miles (67 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-25**. Existing conditions within the Alternative III-A potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. The section of Alternative III-A in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6. Wildlife habitat along Alternative III-A in Beaver County is fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-A corridor also would cross SR-21, an abandoned iron mine site located northeast of Milford, Utah, and a Union Pacific rail line before entering Iron County. Major causes of disturbance in Iron County include agricultural pivots and oil and gas infrastructure. Alternative III-A also would cross SR-56 and a section

Table 3.7-24 Summary of Region III Alternative Route Impact Parameters for Wildlife Species

Parameter[1]	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species												
Nevada pronghorn occupied habitat (acres)	–	–	–	–	–	–	188	57	33,578	–	–	–
Percentage of existing habitat within the Region III big game analysis area	–	–	–	–	–	–	0.09	0.03	15.76	–	–	–
Utah pronghorn crucial yearlong range (acres)	1,529	265	184,956	1,825	343	213,253	1,781	311	208,656	1,781	311	208,656
Percentage of existing habitat within the Region III big game analysis area	0.08	0.01	9.15	0.09	0.02	10.55	0.09	0.02	10.32	0.09	0.02	10.32
Nevada mule deer occupied habitat (acres)	–	–	–	384	92	37,193	140	36	19,933	382	91	37,193
Percentage of existing habitat within the Region III big game analysis area	–	–	–	0.08	0.02	7.65	0.03	0.01	4.10	0.08	0.02	7.65
Nevada elk occupied habitat (acres)	–	–	–	378	92	36,866	63	17	9,976	375	91	36,866
Percentage of existing habitat within the Region III big game analysis area	–	–	–	0.12	0.01	12.06	0.01	0.01	3.26	0.16	0.04	15.36
Utah mule deer crucial winter range (acres)	179	45	16,337	–	–	2,032	–	–	2,032	<1	<1	2,032
Percentage of existing habitat within the Region III big game analysis area	0.07	0.02	6.81	–	–	0.85	–	–	0.85	<0.01	<0.01	0.33
Nevada desert bighorn sheep occupied habitat (acres)	–	–	2,219	–	–	2,412	181	39	27,964	<1	<1	2,412
Percentage of existing habitat within the Region III big game analysis area	–	–	0.36	–	–	0.39	0.03	0.01	4.48	<0.01	<0.01	10.99
Utah desert bighorn sheep occupied habitat (acres)	4	2	1,153	–	–	–	–	–	–	–	–	–

Table 3.7-24 Summary of Region III Alternative Route Impact Parameters for Wildlife Species

Parameter[1]	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Percent of existing habitat within the Region III big game analysis area	0.02	0.01	5.26	–	–	–	–	–	–	–	–	–
Small Game and Nongame Species												
Upland game bird, small game mammal, furbearer, small nongame mammal, and reptile habitat (acres)	3,515	777	401,813	3,499	686	404,795	3,733	738	436,017	3,435	635	354,381
Percentage of existing habitat within the Region III wildlife analysis area	0.05	0.01	5.63	0.05	<0.01	5.67	0.05	0.01	6.11	0.05	<0.01	4,97
Waterfowl habitat (acres)[2]	129	27	13,033	154	27	15,886	96	19	12,307	140	25	14,570
Percentage of existing waterfowl habitat within the Region III wildlife analysis area	0.06	0.01	6.10	0.07	0.01	7.44	0.04	0.01	5.76	0.07	0.01	6.82
Relative Collision Potential for Waterfowl												
Length of transmission line (miles)[3]	276			284			308			281		

[1] Vegetation communities/habitat categories used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities used to calculate acreages of waterfowl habitat disturbance include herbaceous wetland, open water, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Table 3.7-25 Summary of Existing Conditions by Alternative within Region III

Alternative	Length (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Roads within Region III Disturbance Areas	Miles of Roads within Region III Disturbance Areas/Mile of Alternative
III-A	276	91	185	641	2.32
III-B	284	157	128	514	1.81
III-C	308	111	197	668	2.17
III-D	281	121	161	599	2.13

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

of the Union Pacific railroad before continuing into Washington County, Utah. Alternative III-A would be co-located with existing aboveground utilities throughout Washington County and into Nevada; therefore, disturbance and fragmentation are primarily limited to USFS roads where the route enters the mountains. Some agricultural operations, the Veyo Compressor Station (located west of Veyo, Utah) and SR-18 also contribute to habitat disturbance and fragmentation along this section of the alternative route. The remaining segments of Alternative III-A through Nevada are moderately disturbed by county roads, low density oil and gas and livestock operations, and private residences. However, fragmentation increases along this portion of the alternative as the route approaches Las Vegas, Nevada, and crosses I-15 several times, as well as some smaller state highways. A total of 641 miles of existing roads are located within the Alternative III-A potential disturbance areas, as presented in **Table 3.7-25**. This represents the highest existing road density within the disturbance areas among Region III alternatives.

Key Parameters Summary

Game Species

The types of impacts to game species under Alternative III-A generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. Alternative III-A would result in direct disturbance to mule deer crucial winter range in Utah, pronghorn crucial yearlong range in Utah, and desert bighorn sheep occupied habitat in Nevada (**Table 3.7-24**). Implementation of the BLM, UDWR, and USFS restriction to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30 would prevent direct impacts to wintering big game species during applicant construction and operation activities but would not influence indirect impacts from public use of newly created or improved access. Alternative III-A would result in the construction and operation disturbance of 3,515 acres and 777 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-A also would result in the construction disturbance of 129 acres and operation disturbance of 27 acres of waterfowl habitat. These areas represent 0.06 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative III-A generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Alternative III-A would result in the construction and operation disturbance of 3,515 acres and 777 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area.

Alternative III-B

Habitat Disturbance and Fragmentation

Alternative III-B would cross approximately 284 miles of wildlife habitat in Utah and Nevada. Approximately 123 miles (43 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-25**. Existing conditions within the Alternative III-B potential disturbance areas relative to wildlife can be characterized as moderately disturbed and fragmented. The section of Alternative III-B crossing Millard County is fragmented and disturbed by existing BLM maintenance roads, several county roads, existing oil and gas operations, and US-6. Wildlife habitat along the Alternative III-B route in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternate III-B also crosses SH-21, skirts an abandoned iron mine site located northeast of Milford, Utah, traverses a Union Pacific rail line, and runs adjacent to several hog farms before entering into Iron County. Existing causes of disturbance in Iron County include the communities of Beryl and Modena, Utah, and the associated agricultural pivots, ranches, and county roads. Alternative III-B also would cross SR-56 and a section of the Union Pacific railroad that parallels the Project's potential disturbance area from near the Beaver – Iron County line in Utah to Lincoln County, Nevada. A Union Pacific rail line continues within the Alternative III-B potential disturbance areas for approximately 16 miles into Nevada where the rail line heads west at Barclay. The remaining segments of Alternative III-B through Nevada are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. However, disturbance increases along this stretch as Alternative III-B converges with existing transmission line and pipeline corridors near Toquop Wash and enters Clark County, Nevada, where itintersects SR-168 in Moapa. As Alternative III-B approaches Las Vegas, Nevada, the potential disturbance areacrosses I-15 several times, as well as smaller state highways and metropolitan roadways. A total of 514 miles of existing roads are located within the Alternative III-B potential disturbance areas, as presented in **Table 3.7-25**. This represents the lowest existing road density within the disturbance areas among Region III alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative III-B generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Pronghorn crucial yearlong range in Utah and mule deer occupied habitat in Nevada also would be impacted under Alternative III-B. Alternative III-B would result in the construction and operation disturbance of 3,499 acres and 686 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-B also would result in the construction disturbance of 154 acres and operation disturbance of 27 acres of waterfowl habitat. These areas represent 0.07 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative III-B generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Alternative III-B would result in the construction and operation disturbance of 3,499 acres and 686 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative III-C

Habitat Disturbance and Fragmentation

Alternative III-C would traverse approximately 308 miles of wildlife habitat in Utah and Nevada. Approximately 197 miles (57 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-25**. Existing conditions within the Alternative III-C potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. The section of Alternative III-C in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6. Wildlife habitat along Alternative III-C in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-C also would cross SR-21, skirt an abandoned iron mine site located northeast of Milford, Utah, traverse a Union Pacific rail line, and run adjacent to several hog farms before entering into Iron County. Existing causes of disturbance in Iron County include the communities of Beryl and Modena, Utah, and the associated agricultural pivots, ranches and county roads. Alternative III-C also would cross SR-56 and a section of the Union Pacific railroad that parallels the potential disturbance areas from the Beaver – Iron County line in Utah, to the boundary of Lincoln County, Nevada. Alternative III-C would parallel US-93 for the majority of this section. The remaining segments of Alternative III-C through Lincoln County are sporadically fragmented by county roads, low density oil and gas and livestock operations, and private residences. Alternative III-C would continue to parallel US-93 until infrastructure from Las Vegas, Nevada (I-15, Harry Allen Generating Station, and Silverhawk Generating Station and Power Plant) is nearly continuous to the terminus of Alternative III-C just north of the city. A total of 668 miles of existing roads are located within the Alternative III-C disturbance areas, as presented in **Table 3.7-25**. This represents the second highest existing road density within the disturbance areas among Region III alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative III-C generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Pronghorn crucial yearlong range in Utah, desert bighorn sheep occupied habitat in Nevada, and mule deer occupied habitat in Nevada would be impacted under Alternative III-C. Alternative III-C would result in the construction and operation disturbance of 3,733 acres and 738 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-C also would result in the construction disturbance of 96 acres and operation disturbance of 19 acres of waterfowl habitat. These areas represent 0.04 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area. Through implementation of TransWest's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative III-C generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Alternative III-C would result in the construction and operation disturbance of 3,733 acres and 738 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative III-D (Agency Preferred)

Habitat Disturbance and Fragmentation

Alternative III-D would traverse approximately 281 miles of wildlife habitat in Utah and Nevada. Approximately 161 miles (57 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-25**. Existing conditions within the Alternative III-D potential disturbance areas relative to wildlife habitat can be characterized as moderately disturbed and fragmented. The section of Alternative III-D in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6. Wildlife habitat along Alternative III-D in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-D would cross SH-21, skirt an abandoned iron mine site located northeast of Milford, Utah, traverse a Union Pacific rail line, and run adjacent to several hog farms before entering into Iron County. Existing causes of disturbance in Iron County include the communities of Beryl and Modena, Utah, and the associated agricultural pivots, ranches, and county roads. Alternative III-D also would cross SR-56 and a section of the Union Pacific railroad that parallels the Project's potential disturbance area from near the Beaver – Iron County line in Utah to Lincoln County, Nevada. A Union Pacific rail line continues within the Alternative III-B potential disturbance areas for approximately 16 miles into Nevada where the rail line heads west at Barclay. The remaining segments of Alternative III-D through Nevada are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. However, disturbance increases along this stretch as Alternative III-D converges with existing transmission line and pipeline corridors near Toquop Wash and enters Clark County, Nevada, where itintersects SR-168 in Moapa. As Alternative III-D approaches Las Vegas, Nevada, the potential disturbance areacrosses I-15 several times, as well as smaller state highways and metropolitan roadways. A total of 599 miles of existing roads are located within the Alternative III-D disturbance areas, as presented in **Table 3.7-25**. This represents the third highest existing road density within the disturbance areas among Region III alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative III-D generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III. Pronghorn crucial yearlong range in Utah, mule deer occupied habitat in Nevada, and elk occupied habitat in Nevada would be impacted under Alternative III-D. Alternative III-D would result in the construction and operation disturbance of 3,435 acres and 635 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.05 percent and <0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-D also would result in the construction disturbance of 140 acres and operation disturbance of 25 acres of waterfowl habitat. These areas represent 0.07 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area. Through implementation of TransWest's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative III-D generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-24** presents a comparison of impacts to habitat in Region III.

Alternative III-D would result in the construction and operation disturbance of 3,435 acres and 635 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.05 percent and <0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

USFS Management Indicator Species

The Dixie National Forest is within the Region III potential disturbance area. Two wildlife species, the wild turkey and the northern flicker, are identified as MIS that are not otherwise classified as special status species. Only Alternative III-A would be located within the Forest, impacting 161 acres of potential wild turkey habitat and 130 acres of potential northern flicker habitat during construction. Operation would impact 34 acres of potential wild turkey habitat and 29 acres of potential northern flicker habitat. Impacts to Dixie National Forest MIS not otherwise classified as special status species are listed in **Table 3.7-26**. Impacts to MIS also classified as special status species are discussed in Section 3.8, Special Status Wildlife Species.

Alternative Variations in Region III

Table 3.7-27 summarizes impacts associated with the alternative variations in Region III. Impacts to big game species under the three alternative variations in Region III would generally be the same as the comparable portions of Alternatives III-A but would differ in the amount of habitat disturbed (**Table 3.7-27**). Similar to the comparable portions of Alternative III-A, after considering design features and mitigation measures, impacts to game and nongame species from Project construction and operation would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

The Ox Valley East and Ox Valley West alternative variations are both approximately 17 miles in length. The Pinto Alternative Variation is approximately 29 miles in length, of which approximately 16 miles are located within the Dixie National Forest. Impacts to Dixie National Forest MIS not otherwise classified as special status species are listed in **Table 3.7-28**. Impacts to MIS also classified as special status are discussed in Section 3.8, Special Status Wildlife Species. After considering design features and mitigation measures, impacts to raptors and other migratory birds from construction and operation of the Pinto Alternative Variation would be limited primarily to habitat loss, fragmentation, and disturbance during maintenance activities.

Alternative Connectors in Region III

The Moapa, Avon, and Arrowhead alternative connectors would include minimal increases of habitat disturbance relative to the total impacts associated with Region III alternatives, if they were to be utilized. **Table 3.7-29** summarizes impacts associated with the alternative connectors in Region III.

Table 3.7-30 provides a comparison of alternative electrode bed locations proposed in Region III. Some locations might serve multiple alternative routes while others could only be associated with a particular alternative route.

Table 3.7-26 Summary of Region III Alternative Route Impact Parameters for USFS MIS

Parameter	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-D		
Species	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Dixie National Forest MIS not Otherwise Analyzed as Special Status Species[1]												
Wild turkey potential habitat (acres) Habitat associations: Agricultural land, aspen forest and woodland, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	161	34	17,521	–	–	–	–	–	–	–	–	–
Percentage of potential habitat within the Region III MIS Analysis Area	0.01	<0.01	1.36	–	–	–	–	–	–	–	–	–
Northern flicker potential habitat (acres) Habitat associations: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	130	29	16,186	–	–	–	–	–	–	–	–	–
Percentage of potential habitat within the Region III MIS Analysis Area	0.01	<0.01	1.27	–	–	–	–	–	–	–	–	–

[1] MIS that are classified as special status species are presented in Section 3.8, Special Status Wildlife Species.

Table 3.7-27 Summary of Region III Alternative Variation Impact Parameters for Wildlife

Impact Parameters[1]	Ox Valley East Alternative Variation			Comparable Portion of Alternative III-A			Ox Valley West Alternative Variation			Comparable Portion of Alternative III-A			Pinto Alternative Variation			Comparable Portion of Alternative III-A		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species																		
Utah mule deer crucial winter range	–	–	–	31	7	2,472	–	–	–	31	7	2,472	58	14	4,906	86	21	6,745
Percentage of existing habitat within the Region III big game analysis area	–	–	–	0.01	<0.01	1.03	–	–	–	0.01	<0.01	1.03	0.02	0.01	2.04	0.04	0.01	2.81
Small Game and Nongame Species																		
Small game and nongame potential habitat (acres)	313	106	27,527	275	77	28,455	309	109	26,573	275	77	28,455	453	112	44,421	403	112	40,661
Percentage of potential habitat within the Region III wildlife analysis area	<0.01	<0.01	0.39	<0.01	<0.01	0.40	<0.01	<0.01	0.37	<0.01	<0.01	0.40	0.01	<0.01	0.62	0.01	<0.01	0.57
Waterfowl																		
Waterfowl potential habitat[2]	5	3	662	4	1	574	5	2	665	4	1	574	11	3	765	4	1	629
Percentage of potential waterfowl habitat within the Region III wildlife analysis area	<0.01	<0.01	0.31	<0.01	<0.01	0.27	<0.01	<0.01	0.31	<0.01	<0.01	0.27	0.01	<0.01	0.36	<0.01	<0.01	0.29
Relative Collision Potential for Waterfowl																		
Length of transmission line (miles)[3]	17			15			17			15			29			23		

[1] Vegetation communities used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of disturbance to potential waterfowl habitat include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a metric for avian collision potential.

Table 3.7-28 Summary of Region III Alternative Variation Impact Parameters for USFS MIS

Impact Parameters	Ox Valley East Alternative Variation			Comparable Portion of Alternative III-A			Ox Valley West Alternative Variation			Comparable Portion of Alternative III-A			Pinto Alternative Variation			Comparable Portion of Alternative III-A		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Dixie National Forest MIS Not Otherwise Classified as Special Status Species[1]																		
Wild turkey Habitat associations: Agricultural land, aspen forest and woodland, deciduous forest, montane grassland, pinyon-juniper woodland, woody riparian and wetlands	137	45	14,168	111	26	13,174	131	45	12,727	111	26	13,174	191	49	24,637	106	25	14,528
Percentage of potential habitat within the Region III MIS Analysis Area	0.01	<0.01	1.10	0.01	<0.01	1.02	0.01	<0.01	0.98	0.01	<0.01	1.02	0.01	<0.01	1.91	0.01	<0.01	1.12
Northern flicker Habitat associations: Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	136	45	13,624	105	25	12,571	130	45	12,174	105	25	12,571	185	48	24,294	104	25	14,332
Percentage of potential habitat within the Region III MIS Analysis Area	0.01	<0.01	1.07	0.01	<0.01	0.98	0.01	<0.01	0.95	0.01	<0.01	0.98	0.01	<0.01	1.90	0.01	<0.01	1.12

[1] MIS that are classified as special status species are presented in Section 3.8, Special Status Wildlife Species.

Table 3.7-29 Summary of Region III Alternative Connector Impact Parameters for Wildlife Species

Alternative Connector	Analysis
Moapa Alternative Connector	• Approximately 13 miles of transmission lines.[1] • Approximately 10 acres of construction, 2 acres of operation, and 88 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 175 acres of construction, 33 acres of operation, and 23,227 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 45 acres of construction, 8 acres of operation and 3,657 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Avon Alternative Connector	• Approximately 8 miles of transmission lines.[1] • Approximately 99 acres of construction, 18 acres of operation, and 8,614 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 96 acres of construction, 18 acres of operation and 13,906 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction, <1 acre of operation, and 573 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Arrowhead Alternative Connector	• Approximately 3 miles of transmission lines.[1] • No construction or operation indirect impacts to big game priority habitat would occur. • Approximately 53 acres of construction, 9 acres of operation and 6,269 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction, <1 acre of operation, and 601 acres of indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.

[1] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Table 3.7-30 Summary of Region III Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis[2]
Mormon Mesa - Carp Elgin Rd (Alternative III-A)	• Approximately 6 miles of low-voltage, high capacity ground electrode system interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 90 acres of construction and 18 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 34 acres of construction and 7 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Mormon Mesa - Carp Elgin Rd (Alternative III-B)	• Approximately 6 miles of interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 102 acres of construction and 24 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 39 acres of construction and 9 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.

Table 3.7-30 Summary of Region III Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis[2]
Halfway Wash - Virgin River (Alternative III-A)	• Approximately 8 miles of interconnection lines.[3] • No additional construction or impacts to big game priority habitat would occur. • Approximately 83 acres of construction and 15 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 19 acres of construction and 3 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Halfway Wash – Virgin River (Alternative III-B)	• Approximately 8 miles of interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 92 acres of construction and 19 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 21 acres of construction and 4 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Halfway Wash East (Alternative III-A)	• Approximately 4 miles of interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 101 acres of construction and 24 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 17 acres of construction and 7 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Halfway Wash East (Alternative III-B)	• Approximately 10 miles of interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 111 acres of construction and 29 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 34 acres of construction and 9 acres of operation impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Meadow Valley 2 (Alternative III-C)	• Approximately 22 miles of interconnection lines.[3] • No additional construction or operation impacts to big game priority habitat would occur. • Approximately 170 acres of construction and 61 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 17 acres of construction and 6 acres of operation impacts to waterfowl potential habitat would occur. • Approximately 13 acres of construction and 5 acres of operation impacts to the Lower Muddy River BHCA would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.
Delta Design Option 2	• Approximately 14 miles of interconnection lines.[3] • Approximately 127 acres of construction and 37 acres of operation impacts to pronghorn yearlong crucial range would occur. • Approximately 1 acre of construction and <1 acres of operation impacts to mule deer winter crucial range would occur. • Approximately 125 acres of construction and 37 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 2 acres of construction and <1 acre of operation indirect impacts to waterfowl potential habitat would occur. • No construction or operation impacts to MIS would occur within the forest in which a species is designated.

[1] Ground electrode systems are described in detail in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region.

[2] Indirect impacts to wildlife habitat are not reported for the ground electrode systems due to unknown final locations. Final determination of ground electrode bed locations will be made in the POD as outlined in Section 2.4.3.2.

[3] Length refers to length of low-voltage, high capacity ground electrode system interconnection lines (similar to 34.5-kV) and serves as a metric for avian collision potential.

Region III Conclusion

Based on a comparison of impact parameters for Region III alternatives, potential construction and operation impact acreages to wildlife habitat would be varied across all alternatives as presented in **Table 3.7-24**. Alternative III-C would result in the greatest direct and indirect impact acreages to big game, small game, and nongame habitat in comparison to the other Region III alternatives. Alternative III-A would result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-14**. Potential impacts to wildlife species and habitat present within the Dixie National Forest would be greatest for Alternative III-A as presented in **Table 3.7-26**. Although potential impacts to these separate groups of species are varied, Alternative III-C would result in the greatest potential impacts to wildlife in terms of the total acreage of construction and operation impacts combined. Even though the greatest level of impacts are associated with Alternative III-C, Project effects on wildlife species and their habitat would be avoided or considered to be low in magnitude and short term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.5 and **Appendix C**).

3.7.6.6 Region IV

Table 3.7-31 provides a tabulation of impacts associated with the alternative routes in Region IV. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Table 3.7-31 Summary of Region IV Alternative Route Impact Parameters for Wildlife

Parameter[1]	Alternative IV-A			Alternative IV-B			Alternative IV-C		
	Construction impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species									
Nevada desert bighorn sheep occupied habitat (acres)	173	40	18,475	85	25	10,601	104	21	10,831
Percentage of potential habitat within the Region IV big game analysis area	0.06	0.01	6.90	0.03	0.01	3.96	0.04	0.01	4.04
Small Game and Nongame Species									
Upland game bird, small game mammal, furbearer, small nongame mammal, and reptile potential habitat (acres)	392	89	39,440	361	86	38,516	386	88	38,783
Percentage of potential habitat within the Region IV wildlife analysis area	0.04	0.01	4.41	0.04	0.01	4.30	0.04	0.01	4.33
Waterfowl potential habitat (acres)[2]	5	1	451	9	3	2,457	10	3	2,492
Percentage of potential waterfowl habitat within the Region IV wildlife analysis area	0.01	<0.01	0.62	0.01	<0.01	3.36	0.01	<0.01	3.41
Relative Collision Potential for Waterfowl									
Length of transmission line (miles)[3]	37			40			44		

[1] Vegetation communities used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of potential waterfowl habitat disturbance include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to potential length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Alternative IV-A (Applicant Proposed and Agency Preferred)

Habitat Disturbance and Fragmentation

Alternative IV-A would traverse approximately 37 miles of wildlife habitat in southern Nevada. This alternative would be entirely co-located with existing aboveground utilities, as presented in **Table 3.7-32**. Existing conditions within the Alternative IV-A potential disturbance areas relative to wildlife habitat can be characterized as highly disturbed and fragmented. Alternative IV-A is highly fragmented and disturbed by three major highways: SR-147, SR-564, and US-93, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-A potential disturbance areas include a residential area in the eastern portion of the City of Henderson, a Las Vegas Valley wastewater treatment plant, and the Pabco Gypsum Quarry located northeast of Las Vegas. A total of 88 miles of existing roads are located within the Alternative IV-A potential disturbance areas, as presented in **Table 3.7-32**. This represents the lowest existing road density within the disturbance areas among Region IV alternatives.

Table 3.7-32 Summary of Existing Conditions by Alternative within Region IV

Alternative	Length (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Existing Roads within Region IV Disturbance Areas	Miles of Roads within Region IV Disturbance Areas/Miles of Alternative
IV-A	37	–	37	88	2.38
IV-B	40	8	30	116	2.89
IV-C	44	8	35	156	3.54

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative IV-A generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Desert bighorn sheep occupied habitat would be impacted under Alternative IV-A. Alternative IV-A would result in the construction and operation disturbance of 392 acres and 89 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-A also would result in the construction disturbance of 5 acres and operation disturbance of 1 acre of waterfowl potential habitat. These areas represent 0.01 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative IV-A generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-A would result in the construction and operation disturbance of 392 acres and 89 acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile potential habitat within the Region IV wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative IV-B

Habitat Disturbance and Fragmentation

Alternative IV-B would traverse approximately 40 miles of wildlife habitat in Nevada. Approximately 30 miles (75 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-32**. Existing conditions within the Alternative IV-B disturbance areas relative to wildlife habitat can be characterized as highly disturbed and fragmented. Alternative IV-B is highly fragmented and disturbed by four major highways: SR-147, SR-564, US-93, and US-95, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-B potential disturbance areas include the northern portion of Boulder City, the Pabco Gypsum Quarry located northeast of Las Vegas, and low density industrial operations west of Lake Las Vegas. Wildlife habitat along Alternative IV-B also is fragmented by Lakeshore Road, the River Mountain Loop Trail, and the Historic Railroad hiking trail, which parallel the potential disturbance areas immediately west of Lake Las Vegas. A total of 116 miles of existing roads are located within the Alternative IV-B potential disturbance areas, as presented in**Table 3.7-32**. This represents the second highest existing road density within the disturbance areas among Region IV alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative IV-B generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Desert bighorn sheep occupied habitat would be impacted under Alternative IV-B. Alternative IV-B would result in the construction and operation disturbance of 361 acres and 86 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-B also would result in the construction disturbance of 9 acres and operation disturbance of 3 acres of waterfowl potential habitat. These areas represent 0.01 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area. Through implementation of TransWest's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative IV-B generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-B would result in the construction and operation disturbance of 361 and 86acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile potential habitat within the Region IV wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative IV-C

Habitat Disturbance and Fragmentation

Alternative IV-C would traverse approximately 44 miles of wildlife habitat in Nevada. Approximately 35 miles (80 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.7-32**. Existing conditions within the Alternative IV-C potential disturbance areas

relative to wildlife habitat can be characterized as highly disturbed and fragmented. Alternative IV-C is highly fragmented and disturbed by four major highways: SR-147, SR-564, US-93, and US-95, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-C potential disturbance areas include the Pabco Gypsum Quarry located northeast of Las Vegas and low density industrial operations west of Lake Las Vegas. Wildlife habitat along Alternative IV-C also is fragmented by Lakeshore Road, the River Mountain Loop Trail, and the Historic Railroad hiking trail, which parallel the potential disturbance areas immediately west of Lake Las Vegas. A total of 156 miles of existing roads are located within the Alternative IV-C potential disturbance areas, as presented in **Table 3.7-32**. This represents the highest existing road density within the potential disturbance areas among Region IV alternatives.

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative IV-C generally would be the same as described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Desert bighorn sheep occupied habitat would be impacted under Alternative IV-C. Alternative IV-C would result in the construction and operation disturbance of 386 acres and 88 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.04 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-C also would result in the construction disturbance of 10 acres and operation disturbance of 3 acres of waterfowl potential habitat. These areas represent 0.01 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area.

Nongame Species

The types of impacts to nongame species under Alternative IV-C generally would be the same as those described in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Transmission Line Routes and Associated Components. **Table 3.7-31** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-C would result in the construction and operation disturbance of 386 acres and 88 acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.04 percent and 0.01 percent of the available small mammal and reptile habitat within the Region IV wildlife analysis area.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to wildlife species and their habitats are the same as those identified for Alternative I-A.

Alternative Variations in Region IV

The types of impacts to big game species under the Marketplace Alternative Variation in Region IV generally would be the same as the comparable portions of Alternative IV-B but would differ in the amount of potential habitat disturbed (**Table 3.7-33**). Similar to the comparable portions of Alternative IV-B, after considering design features and mitigation measures, impacts to game and nongame species from Project construction and operation would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.7-33 Summary of Region IV Alternative Variation Impact Parameters for Wildlife Species

Impact Parameters	Marketplace Alternative Variation			Comparable Portion of Alternative IV-B		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species						
Nevada desert bighorn sheep occupied habitat (acres)	9	2	2,153	–	–	14
Percentage of existing habitat within the Region IV big game analysis area	<0.01	<0.01	0.80	–	–	0.01
Small Game and Nongame Species						
Small game and nongame potential habitat (acres)[1]	49	9	4,979	–	–	1,784
Percentage of potential habitat within the Region IV wildlife analysis area	0.01	<0.01	0.56	–	–	0.20
Waterfowl potential habitat[2]	–	–	–	–	–	–
Percentage of potential habitat within the Region IV wildlife analysis area	–	–	–	–	–	–
Relative Collision Potential for Waterfowl						
Length of transmission line (miles)[3]	8			7		

[1] Vegetation communities/habitat categories used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of waterfowl potential habitat disturbance include open water, herbaceous wetland, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Alternative Connectors in Region IV

The five alternative connectors would include minimal increases of total habitat disturbance relative to the total impacts associated with Region IV alternatives if they were to be utilized. These alternative connectors, except for Sunrise Mountain Alternative Connector, would be within desert bighorn sheep occupied habitat. **Table 3.7-34** summarizes impacts associated with the alternative connectors in Region IV.

Table 3.7-34 Summary of Region IV Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Sunrise Mountain Alternative Connector	• Approximately 3 miles in length.[1] • No construction or operation impacts to priority big game habitat would occur. • Approximately 51 acres of construction, 8 acres of operation, and 5,815 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction, <1 acre of operation, and 117 acres of indirect impacts would occur to waterfowl potential habitat.
Lake Las Vegas Alternative Connector	• Approximately 4 miles in length.[1] • Approximately 50 acres of construction, 14 acres of operation, and 3,721 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 59 acres of construction, 16 acres of operation, and 5,426 acres of indirect impacts to small game and nongame potential habitat would occur. • No construction or operation impacts to waterfowl would occur; approximately 71 acres of indirect impacts to waterfowl potential habitat would occur.

Table 3.7-34 Summary of Region IV Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Three Kids Mine Alternative Connector	• Approximately 5 miles in length.[1] • Approximately 91 acres of construction, 25 acres of operation, and 6,464 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 73 acres of construction, 21 acres of operation, and 7,567 acres of indirect impacts to small game and nongame potential habitat would occur. • No construction or operation impacts to waterfowl potential habitat would occur; approximately 72 acres of indirect impacts to waterfowl potential habitat would occur.
River Mountains Alternative Connector	• Approximately 8 miles in length.[1] • Approximately 161 acres of construction, 57 acres of operation, and 11,824 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 152 acres of construction, 53 acres of operation, and 12,612 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately <1 acre of construction, <1 acre of operation, and 246 acres of indirect impacts to waterfowl potential habitat would occur.
Railroad Pass Alternative Connector (Alts IV-A & IV-B)	• Approximately 4 miles in length.[1] • Approximately 25 acres of construction, 5 acres of operation, and 1,535 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 10 acres of construction, 4 acres of operation, and 2,566 acres of indirect impacts to small game and nongame potential habitat would occur. • No construction or operation impacts to waterfowl potential habitat would occur.

[1] Length refers to length of 600-kV transmission lines and serves as a proxy metric for avian collision potential.

Region IV Conclusion

Based on a comparison of impact parameters for Region IV alternatives, potential construction and operation impacts to wildlife habitat would be greatest for Alternative IV-C, as presented in **Table 3.7-31**. Potential impacts from Alternative IV-B would be similar to those from Alternative IV-C, although less overall acreage would be impacted (**Table 3.7-31**). Potential impacts from Alternative IV-A would be relatively low compared to those from Alternatives IV-B and IV-C. Alternative IV-C would result in the greatest combined direct and indirect impacts to big game and small game habitat in comparison to the other Region IV alternatives (**Table 3.7-31**). Alternative IV-C also would result in the highest potential construction disturbance to riparian areas near perennial streams, as discussed in Section 3.9, Aquatic Biological Resources and presented in **Table 3.9-18**. Although the greatest level of impacts would be associated with Alternative IV-C, impacts to wildlife species and habitat would be avoided or considered to be low in magnitude and short-term in duration after applying BMPs, design features, and additional mitigation measures (Sections 3.7.6.2 and 3.7.6.6 and **Appendix C**).

3.7.6.7 Residual Impacts

Although it is anticipated that wildlife mitigation measures would be effectively implemented, some residual impacts to wildlife and habitat would occur. Long-term residual impacts to habitat have been quantified and disclosed as operation impact acreages to vegetation communities. Residual impacts would include the loss of vegetation related to the permanent placement of facilities, access roads for the life of the Project, the invasion and spread of noxious weeds and invasive species into previously undisturbed areas, and fragmentation of native habitats. Timeframes for successful reclamation can vary by habitat type and initial impact intensity. Section 3.5.6.7 discusses residual impacts to vegetation communities. Depending on the timing of construction and reclamation success, species that are rare or whose habitat requirements are very specific and limited could be impacted at the local population level. Large predators and scavengers could be impacted by changes in big game behavior and occurrence due to long-term habitat fragmentation. Big game population dynamics could be altered temporarily or permanently, as a result of habitat alteration, degradation, and fragmentation. Large predators could

exhibit altered prey selection and hunting success in response to changes in big game occurrence. Small game and nongame species also would experience the same types of residual impacts.

Habitat fragmentation generally occurs through habitat loss and involves both a reduction in habitat area and a change in habitat distribution. Fragmentation can be considered at a range-wide scale, a population scale, and a home-range scale. Fragmentation at the range-wide scale can affect dispersal between populations; at the population scale it can alter local population dynamics; and at the home range scale, it can affect individual survival and reproduction (Franklin et al. 2002). At the home range scale, the consequences of habitat loss, degradation, and fragmentation include increased predation rates, decreased reproductive success, and increased brown-headed cowbird parasitism rates (Great Basin Bird Observatory [GBBO] 2010). These impacts are likely to result in reduced nesting attempts and breeding success for multiple species, reduced recruitment, and incremental reductions in overall local population health and sustainability.

During extended periods of reclamation, it is expected that habitat function would be reduced until reclamation is fully complete. However, achieving plant maturity and full restoration of vegetation communities would require a long time period, during which there would be temporary loss, degradation, and alteration of habitat. Even with successful reclamation to original vegetation communities after decommissioning, variability in plant structure and age would still constitute habitat fragmentation. Habitat fragmentation could result in long-term wildlife avoidance and displacement. Long-term changes in wildlife species occurrence and diversity could occur as a result of changes in habitat composition, quality, and continuity. The time required to successfully reclaim all impacted habitats to original species composition, diversity, and age structure could range from 3 to 100 years depending on the plant community and site-specific conditions, as described in Section 3.5.6.7, Residual Impacts.

Vegetation recovery to similar cover and species composition after implementation of a reclamation program is expected to occur at varying rates. Reclamation and recovery timeframes for each vegetation cover type are presented in Section 3.5.6.7, Residual Impacts. Some native habitats may not return to pre-construction conditions due to alteration of soil communities, noxious weed invasion, or loss of biological soil crusts. Fragmentation of native habitats and the conversion of vegetation communities may occur over the long term, depending on the success of reclamation and associated disturbance from maintenance activities over the life of the Project. Noxious weed and invasive species may persist over the long-term, regardless of the implementation of control programs.

3.7.6.8 Irreversible and Irretrievable Commitment of Resources

Construction and operation of any of the Project alternatives would result in the irretrievable commitment of both wildlife and potential habitats during the life of the Project. Depending on the selection of alternatives, the amount of wildlife habitat irretrievably committed would range from 23,984 acres to 29,539 acres. However, as discussed in **Appendix D**, it is anticipated that upon decommissioning of the Project, reclamation measures would result in the return of impacted areas to native habitats. Some vegetation communities are expected to return to a native state within a relatively short period of time (i.e., 5 years). Other more sensitive habitats, such as sagebrush shrublands, may require up to 50 years or longer to return to native conditions. Regardless of timeframes, it is possible that wildlife habitat impacted during construction could return to pre-project conditions, thus avoiding any irreversible commitments of wildlife habitat.

3.7.6.9 Relationship between Local Short-term Uses and Long-term Productivity

Wildlife habitat would be diminished due to local short-term and long-term uses until reclaimed areas return to mature vegetation communities. As discussed above, these temporal losses can vary in the time required to return to pre-construction conditions. This range of temporal loss is expected to be between 5 and 50 years, depending on the vegetation community. Construction and operation of any of the Project alternatives are anticipated to result in minor impacts to the short-term productivity of local migratory bird populations and sagebrush obligate wildlife species due to the loss of habitat resulting

from construction and the avoidance of suitable habitats resulting from increased temporary disturbance levels. These impacts are expected to be limited to mortality resulting from collisions with Project infrastructure and avoidance due to increased levels of human activity and predation. Impacts from direct habitat loss are expected to be negligible as the total anticipated loss of wildlife habitat as a result of Project construction would be less than 1 percent of available potential habitats within the wildlife analysis area.

3.7.6.10 Impacts to Wildlife from the No Action Alternative

Under the No Action Alternative, the BLM would not issue a ROW grant or temporary use permit, the USFS would not issue a special use permit for the ROW on lands administered by the USFS, and the proposed Project would not be implemented. The analysis areas would continue to be subject to current authorizations and land uses (e.g., livestock grazing, agriculture, energy development, mining, etc.). The previously described impacts to wildlife and habitat associated with the development of the proposed Project would not occur.